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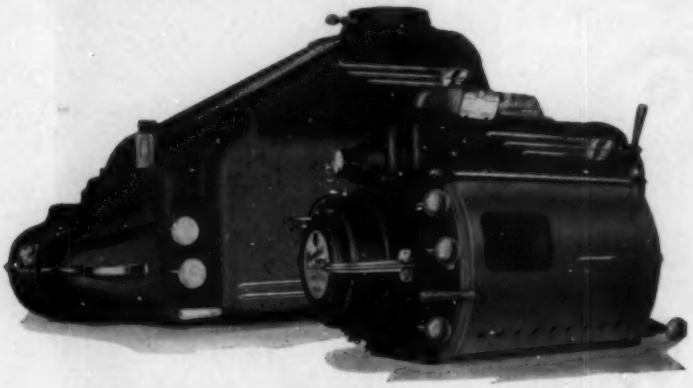

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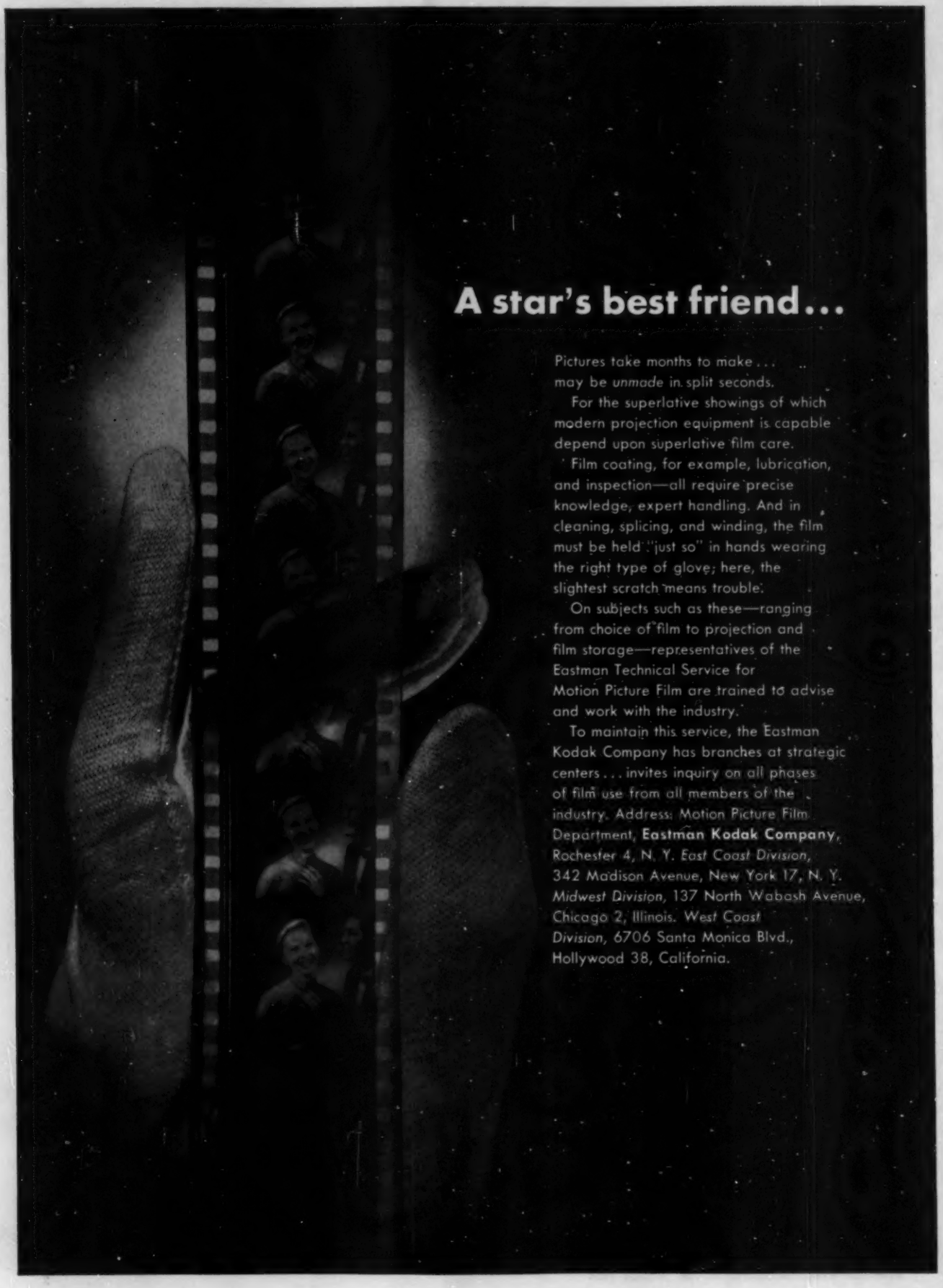

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INTERNATIONAL PROJECTIONIST

With Which Is Combined PROJECTION ENGINEERING

R. A. ENTRACHT, *Managing Editor*
JAMES MORRIS, *Associate Editor*

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MONTHLY CHAT

SOME years ago, an aviator called Corrigan flew across the Atlantic without official permission. Taken to task, he politely explained that he had no intention of spanning the ocean but he had made a "mistake" and flown in the wrong direction. And so, "wrong-way Corrigan" passed into history with a laugh.

But the "wrong-way movies" of the last few years are not so funny. Indeed they are tragic for the industry, the labor which has built it up, and the public which is served.

Did the industry adopt a single sensible aspect ratio (for example, 1.75 or 2.00 or even 2.25)?

Did it accept a reasonably sized and economical screen of easily installed and readily movable type?

Did it avoid off-beat lens systems?

Did it adopt the simplest and least costly sound systems which would do what was needed?

Did it keep projection-room jobs on a basis that could be handled by men with only two arms and two legs?

And in the 3-D field, did it work out correct 3-D camera methods and correct projection equipment and processes *in advance?*

Did it provide reasonable size reels and enough projectors to handle the job sensibly and without long and unpleasant intermissions?

Did it put good stories into 3-D? And did it furnish acceptable 3-D spectacles for the audience? Were the 3-D pictures on the screen bright enough?

Did the producers enthusiastically support 3-D with their *best directing*, acting, writing, and technical talent?

Did the enthusiastic audience reaction to the handful of, at least, fair 3-D pictures jar the producers into producing more and better 3-D pictures?

Were the problems of the studio, the box-office, and of Labor all sympathetically and intelligently considered?

To all these questions, the unfortunate answer is a resounding "No!" And, in addition, with story values again dropping in many instances, does the future look bright during this uncertain period? You can answer for yourself.

There never was so critical a time for "Corrigan of the Movies" to look soberly at his problems and intelligently, bravely, and continuously try to solve them. If he wishes to reach Hollywood, he should stop flying to Ireland.

[The foregoing is by way of being a preliminary to the inclusive article headed "Where Do We Go From Here?" beginning on page 7.]

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"THERE'S A BRANCH NEAR YOU"

VOLUME XXIX MARCH 1954 NUMBER 3

Where Do We Go From Here?

The once-proud motion picture business which prided itself on its technological achievements is today faced with the fruits of its own timidity and indecision. Technical problems that could have been resolved with a minimum of expense and effort a few short years ago — with much face-saving in terms of public relations — constitute a major industry sickness. IP now reiterates this conclusion.

IT IS now March, 1954, and nearly a year has past since some seemingly harsh opinions on how the industry has handled the so-called new processes were expressed in an editorial in this magazine. In the intervening months there have been no epoch-making developments that would suggest a change in this outlook. We refer specifically to the following excerpt from a commentary which appeared in IP for May, 1953 (page 23).

> Here's how the "majors" stack up in terms of aspect ratio preferences (keeping in mind 20th Fox's 2.55 to 1 ratio):
>
> Paramount—1.66 to 1; RKO—1.70 to 1; Columbia—1.85 to 1; M-G-M and Warners—2 to 1. It will be noted that these figures are not too far apart, and it is likely that just a little giving and taking all around could achieve unanimity for a standard ratio. . . .
>
> IP holds that a projection system adopted by any theatre should have two basic characteristics: 1, it should fill the normal line of sight for a majority of the seats, and 2, it should be consistent with not ripping out a theatre's entrails by major structural changes.
>
> As for screen sizes for *all* types of pictures, IP's preference is as follows:
>
> Small Theatre: 30 x 18 ft.
> Medium Sized: 44 x 24
> Large Theatre: 50 x 38

It is obvious from the foregoing that there exists a basic conflict of ideas. Why?

The "why?" of this situation need never have ben posed by an industry that prided itself upon being the fifth largest in hte world if there had been even a modicum of common sense among those who have directed its destinies.

Witness how another (and, if you will, blood-brother) art solved one of its most complex problems. We quote now from the official figures on the RMA (Radio Manufacturers' Association) which portray graphically the effort expended to nourish a developing industry which for many years previous had not even paid its "keep." In the past 20 years the radio-Tv industry has expended for *developmental work* the following:

1. For black-and-white Tv $30,000,000
2. For color development 45,000,000
3. For supplementary color research 50,000,000
4. Cooperative study of the basic problems of color Tv, through the National Tv System Committee ... 10,000,000

Now, then, when did the responsible executives of the motion picture business ever hold a round-table conference for a discussion of general industry problems? If they met in private at Miami Beach or Palm Springs, were the conclusions stemming from such a meeting of the great minds made available to the industry from which they have for years drawn their sustenance?

IP has consistently advocated — nay, begged—for a meeting of minds among those whose livelihoods depend upon the successful conduct of an industry which depends for its life blood upon serving the public. The most unimpressive coffee house would not ignore such a challenge to its existence.

We quote from a recent (March 4) bulletin from the Theatre Owners of America, Inc. a statement attributed to President Walter E. Reade:

"Mr. Y. Frank Freeman . . . explained that when a picture is made by the new Vistavision camera and

projected by means of *conventional* prints in an aspect ratio of 1:85, there is a tremendous improvement in entertainment value. Mr, Freeman went on to state that while he did not criticize or knock any other aspect ratio, his company (Paramount) felt that the 1:85 ratio was the more efficient because *it had height as well as width.*

"We questioned Mr. Freeman concerning the use of stereophonic sound and we were told unequivocally that Paramount will not require the use of stereophonic sound under any conditions."

We quote now from an address by Herbert Barnett, president of the Society of Motion Picture and Television Engineers, before the recent meeting of the National Allied Drive-In Theatres Association:

Still Experimenting

"Some of the studios have indicated something less than satisfaction with the CinemaScope sound proposal. This is evidenced through their continued experimentation with other schemes. Some of these are apparent attempts to accomodate product to all theatres, whether equipped with stereo sound or not. Some indicate preference for optical recording over magnetic, and only the sponsors know what some of the others are trying to accomplish.

"One aspect of this we can all understand—confusion still reigns. It would be extremely narrow-minded to suggest that these experiments cease, for it is through such that progress is assured. In the present state of the art, however, it is urgent that these be kept in the laboratory until engineering and economic facts clearly establish the process as commercial in the accepted sense of being adaptable to all segments of exhibition. And there should be prior agreement, through give and take, on one system acceptable to all. This is almost too much to expect until you realize that a healthy industry demands it be so."

How can any major industry exist without standards?

Mr. Spyros Skouras states flatly that no CinemaScope production will be licensed for exhibition unless the 20th Century-Fox version be used. One question immediately suggests itself: Will the use of the special CinemaScope sound reproducing equipment insure the boxoffice success of a given production, and thereby justify the added expense involved?

IP's view is precisely the same today as it was a year ago (May 1953):

Really Good Pictures

"With all this fussing about new processes, visual and sound, let's not forget that a bad picture cannot be helped by them and a good picture cannot be hurt by their absence. We're mindful of the fact that a *good* old-fashioned 2-D picture, "Moulin Rouge", is now in its 14th week at the Capitol Theatre on Broadway, N. Y. City, and that over on 52nd St. another *good* 2-D picture "Lilli", still is knocking them dead around the clock daily at $1.50 a head.*

"We wish wistfully that the dozen or so men whose aggregate income as "leaders" of the motion picture industry runs to several millions annually, and who meet socially with the utmost cordiality in Hollywood, in Miami and New York, in Paris and Monte Carlo and in Rome — we wish these fellows would spend about $25 for a hotel suite some afternoon and, with the help of a few first-class technical minds, reach a degree of agreement which would put an end to all this insanity. It's simply incredible that they don't."

When the writer first saw CinemaScope he was doubtful of its commercial success, because the composition of the image (not ot mention the photographic quality) violated the basic fundamentals of artistic photographic framing. Still unanswered is the question of whether any artistic composition may be presented on a super-elongated framework. We in the motion picture industry, can no longer contest the comfortable immediacy of home Tv with "gimmicks."

We are tossed and pulled by a bewildering variety of suggestions which if subjected to two hours honest consideration by competent technicians would be dissolved as is the morning mist by the rays of the sun. But we are asked to digest the economically-unpalatable fare of the non-technical overlords and their technically-minded sycophants, who in the process of collecting their quite handsome weekly stipend, are throttling the exhibition end of the business.

In short, it is the old, old story of the tale wagging the dog. What, then, can be done to effect some degree of order out of this economic and technical chaos? Lest it be thought that IP projects its own particular brand of bias, we again quote Herbert Barnett, president of the SMPTE in his interesting speech to the confused operators of our nation's drive-in theatres.

Industry Stability

"I feel that stability could be accomplished only through a change in the operating pattern of the industry and that there was now great need for some kind of mechanism through which products of the present technical evolution could be sifted and impartially evaluated in the interests of all.

"Since the exhibitor is 'closest to the customer's requirements and preferences' he can best provide what the audience wants to see and he can do this with attention to the technical performance of his own equipment."

Varying aspect ratios? Curved screens? Stereophonic sound? Picture height and width? These and many other problems which confront the exhibition end of this industry, and on the solution of which depends the livelihoods of thousands of conscientious and hard-working people, are not insoluble. The chief executives of the major producing companies are but a telephone call removed from each other. Dealing in the communication of intelligence, as we in the motion picture industry most certainly do, this should be no difficult feat.

* Lili is still playing at this theatre and is billed as the longest-run hit in New York.

Harvard O'Laughlin (right), business representative for Local 143, St. Louis, Mo., presents honorary membership card to Lester B. Isaac, director of exhibition for Stanley Warner Cinerama Corp.

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Simple "Degaussing" Procedure Protects Magnetic Tracks

Alertness is required in the projection room to prevent CinemaScope sound from picking up noise or being erased by stray magnetic fields.

By EDWARD STANKO

Manager, Engineering Section, Technical Products Service Division
RCA Service Co., Inc., Camden, N. J.

WITH the advent of sound recordings on magnetic tape, and particularly stereophonic sound on magnetic striped film, special precautions are necessary for handling magnetic film by recording engineers, film laboratories, studios and projectionists. Unless special precautions are taken, it is possible to erase the sound from the magnetic track, or to add extraneous noises and sounds which may ruin the sound on the tape or film. In many instances, proper "degaussing" of certain parts of the equipment may be necessary to avoid such damage.

The problem of degaussing is not new, nor is it difficult to degauss metal parts of a projector or soundhead. Nearly everyone is familiar with demagnetization or degaussing of a timepiece or watch. Watches that have become magnetized run erratically and will not keep accurate time. They must be degaussed before they can be adjusted and regulated to keep accurate time. This is done by passing the watch through an alternating current magnetic field.

Normally, the molecular structure of metals is arranged in a haphazard way and not much attention is given to their arrangement unless the materials are susceptible to magnetic fields and are used in electrical or electronic circuits, or must be arranged in some particular way for stress purposes.

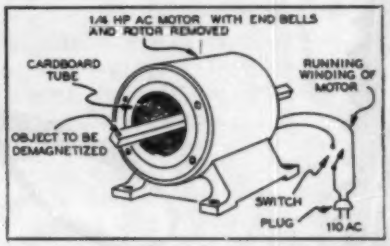
The recording of sound on magnetic tape or film is a process whereby the molecules of iron oxide are arranged in a pattern to conform to the magnetic flux produced by the recorder head in response to a signal from the pickup microphone through the amplifier system.

The varying magnetic flux of the recorder head leaves a semi-permanent residual magnetic field on the iron oxide of the sound track which can be converted to sound by running the tape or film over the reproducing head. The magnetic track can be made visible by the application of Visi-Mag* to the tape or film if the signal level to the recording head is high enough and the magnetic oxide molecules retain sufficient magnetism to orient the fine ferrous particles in the Visi-Mag.

Because the sound recorded on magnetic tape or film is accomplished by varying the frequency and amplitude of the magnetic flux of the recorder head, extraneous sound can be recorded on the magnetic tracks, or the sound on the tracks can be wiped off by stray fields produced by any electrical device that has an electro-magnetic field, or any object that has become magnetized, either purposely or inadvertently in the process of manufacture or use.

Electrical devices, which produce electromagnetic fields and used near film recording or reproducing equipment are: electric motors, transformers, arc lamp rectifiers, arc lamp generators, rewind motors, exciter lamp power supply units, soldering irons, etc.

Parts that may become magnetized and may be the cause of introducing extraneous noises on the magnetic sound track, or may be responsible for wiping the sound from the tracks are projector sprockets and sprocket shafts, soundhead sprockets and sprocket shafts, projector and soundhead pad rollers, pad roller shafts

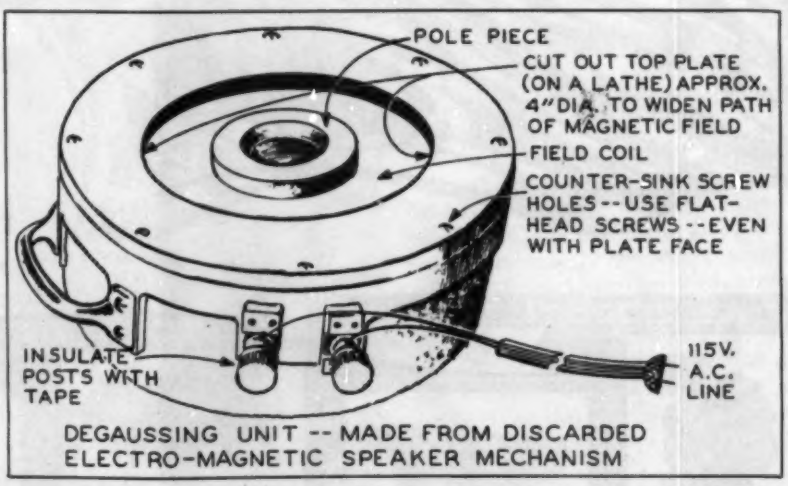


Degausser from old electric motor

and fire trap rollers. Projector gate shoes, particularly the pressure shoes mounted on the end of the pressure gate to apply pressure to the film on the intermittent sprocket, have also been frequent causes of wiping sound modulation from magnetic film.

In order to protect the recorded sound on magnetic sound tracks all metal parts that can become magnetized should be carefully checked with a small compass or gauss meter. Any part that has less than ten gauss will probably not affect the sound track. A small compass will give a relative indication of how much magnetism a part has by registering the amount of attraction or repulsion it exerts on the compass.

A very simple way to check a metal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part is to use a ferrous stapling clip taken from a paper hand stapler. If the magnetized object will pick up an individual iron staple clip, it probably has more than ten gauss. If it does, the part should be degaussed. If it will not pick up a staple clip, the amount of magnetization is probably less than ten gauss and will have no effect on the recorded sound nor will it wipe any sound from the magnetic tracks.

In addition to magnetized projector and soundhead parts causing damage to the sound tracks, stray fields produced by rewind motors have been known to affect the sound track. Magnetic track films should be rewound either by hand or the motor placed in such position so that its field will not affect the sound track. Cutting of magnetic sound films with magnetized film splicers, or scissors, can also introduce noise on the sound track. All such devices should be degaussed before using on magnetic film.

Degaussing Tools

For degaussing metal parts, the most convenient tool is a Weller S-500, 250 watt gun-type soldering iron equipped with special coils. The following size coils are recommended.

Twelve turns of #6 wire wound into a coil 3½ inches in diameter. This coil can be used to degauss a complete projector gate and other large parts.

Twelve turns of #8 wire wound into a coil 2½ inches in diameter. This coil size can be used to degauss sprockets, sprocket shafts, pad rollers, fire trap rollers, etc.

Twelve turns of #14 wire wound into a coil ½ inch in diameter. This smaller diameter coil is used to degauss the magnetic reproducer pick up head. All coils should be made of round copper wire insulated with Formvar.

One small compass. This item is available in sizes from ½ inch to 1½ inches in diameter.

An excellent type of degausser can be made from a discarded ¼ horsepower AC motor. Remove both endbells of the motor. Insert a cardboard tube inside of the motor so that the metal parts to be degaussed do not contact the metal parts of the motor. This will prevent such parts as sprocket teeth from becoming damaged. Connect the motor running winding to a 110 volt AC power supply through a switch. A foot switch will be found to be very convenient when numerous parts have to be degaussed.

Similarly, an excellent degaussing unit can be made from a discarded electro-magnetic speaker mechanism. The voice coil and diaphragm are removed from the unit and discarded. The air-gap between the center polepiece and the inside periphery of the cover plate is enlarged to widen the magnetic field path. The field winding can be connected to a 110 volt AC circuit without rewinding as the impedance of the coil is higher than the DC resistance of the coil. The part to be degaussed is passed over the magnetic field while the field coil is connected to the AC power circuit.

Proper Procedure

After it has been determined that a part is magnetized by using a gauss meter, compass, or a staple clip, a coil of suitable diameter is slipped over the part and the coil connected to the soldering unit terminals. With AC power applied to the gun, pass the coil over the part and withdraw slowly to a distance of two feet before turning off power.

Do not turn off the AC power while the part is in the field of the coil. Always withdraw the object that is being degaussed slowly from the magnetic field. Degaussing should be continued for about 30 seconds for each part. After the part has been degaussed, it should be checked with a compass or staple clip to determine if there is any magnetism left. If there is, the procedure should be continued and, if possible, the part being degaussed should be rotated as the part may be magnetized in several directions, that is, vertically, horizontally or transverse.

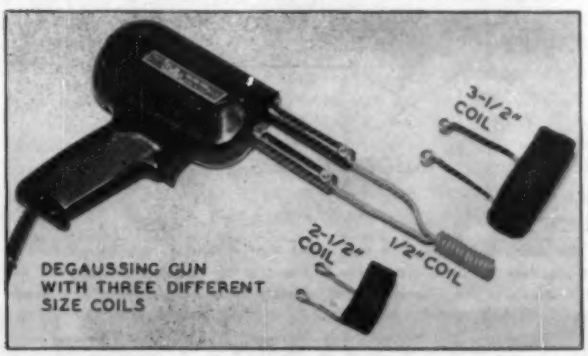
It is advisable that degaussing of projector and soundhead parts be done at periodic intervals. In some instances it has been necessary to degauss more than once weekly, depending on local conditions. It is suggested that each projection room be equipped with degaussing equipment so that new parts or parts subject to magnetism can be degaussed before serious damage occurs.

In checking the parts for magnetization, be sure the "metal attraction" for the compass needle is not mistaken for magnetization of the part. In some cases transverse or radial magnetization cannot be completely eliminated, and it is questionable if such magnetism would have any affect on the magnetic sound track.

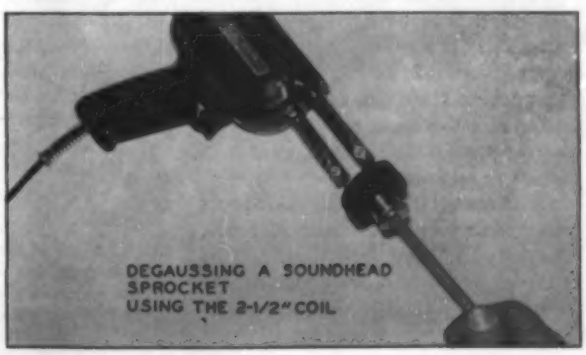
What "Degaussing" Means

"Degaussing" is another of those strange-looking words that are now being bandied about in projection circles. It simply means "demagnetizing" and is used in reference to various projector parts and other equipment which may generate magnetic fields. The word gauss is from the name of Karl F. Gauss, a German mathematician, and is a unit of measurement for the intensity of a magnetic field.

As explained in Mr. Stanko's article, when a magnetic field reaches 10 gauss, it is sufficiently powerful to injure magnetic sound tracks.



DEGAUSSING GUN WITH THREE DIFFERENT SIZE COILS


DEGAUSSING A SOUNDHEAD SPROCKET USING THE 2-1/2" COIL

THE LENS: Key to Projection Quality

The second in a series of three articles.

By ROBERT A. MITCHELL

THERE are major optical aberrations which tend to spoil the performance of lenses. Two of these are chromatic aberrations which introduce spurious colors around the edges of images. All good lenses are practically free from color aberrations, which are eliminated by using several kinds of optical glass of proper curvature in a single lens. Much more difficult to eliminate are several of the remaining five aberrations which affect the clarity of the image and the flatness of the field.

The lens designer cannot get rid of all of the aberrations entirely: he can only reduce them to the point where they are no longer bothersome. Several compromises have to be effected, and the most critical tests will reveal traces of several aberrations in even the finest lens.

Aberrations in Lenses

Spherical aberration prevents the formation of crisp images; *coma* is the most serious obstacle to sharp focus at the edges of the field, and *field-curvature* prevents a sharp focus at the center and edges of the field simultaneously.

The faster the lens and the shorter its focal length, the greater the difficulties which the seven aberrations present to the optical designer. Residual aberrations may prevent top picture quality. As a rule, flat-field, short-focus lenses result in images lacking "crispness" and brilliant contrasts. And yet, modern short-focus lenses are superior to old-style ones because the new optical glasses and anti-reflection coatings permit the designer to use six or eight instead of the usual four elements. This means that he can reduce the troublesome aberrations to lower levels than was formerly possible.

As already mentioned, short-focus lenses have very little depth of focus, especially if they be "fast." This is the nature of the beast and cannot be remedied. Strange as it may seem, even a *perfect* short-focus lens (if there were such a thing!) would reveal the focus-ruining effects of film-flutter and buckling which normally occurs under the influence of heat.

Safety Film Characteristics

Some of our focusing troubles may be blamed on the high-acetyl safety film in its present form. This type of acetate film is a bit too sensitive to heat to be really good for projection in theatres. True, it shrinks very little, and it does not get so brittle with repeated use as the old nitrate film did. But heat warps and deforms it and causes it to buckle and flutter in the gate much worse than nitrate film. We got clearer movies with nitrate film. The answer to this problem is the development of a tougher, more heat-resistant safety film.

We projectionists know that uneven gate tension and hollowed places worn in the steel film-runners adjacent to the aperture distort the film so that it fails to lie flat over the aperture. (Of course, film never lies *perfectly* flat over the aperture, but at least the position it assumes should be symmetrical to the lens.) If one corner of the film-photograph is bent away from the lens by only a few thousandths of an inch, for example, the corresponding corner of the projected picture will be a bit hazy — and no amount of focusing will clear it up!

This defect is easily corrected by installing new film-track runners and new gate-door tension pads, the only sure cure where just *one* corner of the picture stubbornly refuses to come into focus. The trouble can also affect more than one corner; and even one whole side of the picture, usually the right-hand side, may be slightly blurred.

Although the lens is rarely to blame for lack of clearness in just one corner or side of the picture, it is nevertheless a good idea to test the lens.

Lens Test Procedure

Loosen the lens-barrel clamp so that the entire lens can be rotated in the holder. Project a reel of pictures and rotate the lens barrel slowly, maintaining the sharpest possible focus all the time. If the blurred area moves around the screen, the lens is at fault, and should be replaced with a new one at once. But in all probability the offending area will stay in the same place. In this eventuality there is

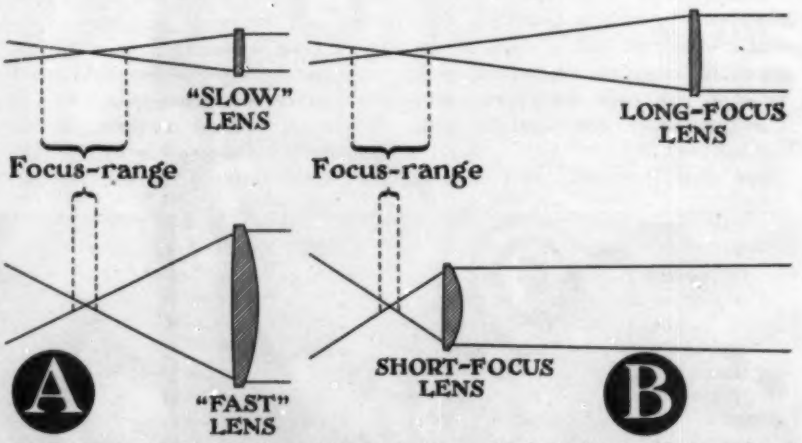


FIG. 1. Depth of focus. The sharpest image of a true point that a lens is able to produce is really a small disc — the smallest "circle of confusion." The size of this disc-image does not change appreciably when the lens or the film is moved within a short range called the depth of focus of the lens. As shown in (A), "slow" lenses have a greater depth of focus than "fast" lenses. And, as shown in (B), long-focus lenses have more depth of focus than short-focus lenses.

NOW

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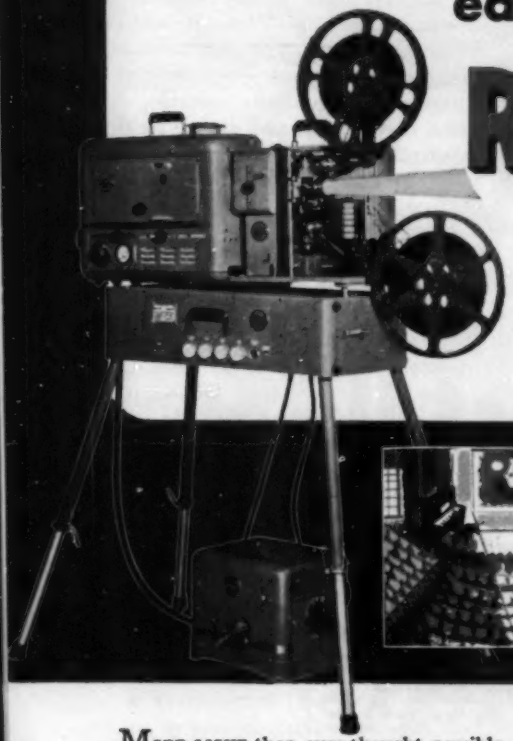
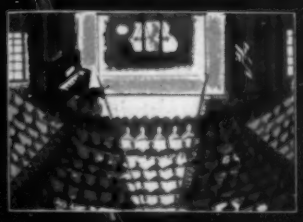
RCA PORTO-ARC 16mm PROJECTOR





MORE LIGHT than ever thought possible with a 16mm projector assures users of the RCA Porto-Arc Projector of sharp, clear and bright pictures on the screens of large auditoriums.

Industry, business and education can now show 16mm films at their best in company or school auditoriums...in tents at road shows, in fairs in rural areas, and to groups gathered outdoors.

RCA's new Porto-Arc 16mm Projector operating at 30 amperes delivers up to 1600 lumens, providing brilliant screen images on screens as wide as 20 feet. When operating at 10 amperes, the 750 lumen output provides brilliant pictures on screens up to 15 feet wide, and one set of carbons burns over two hours.

The powerful amplifier is especially designed for 16mm reproduction of speech and music at high levels with the best sound quality. It provides all the power output needed for a wide choice in speaker setups—from single or multiple portable speaker units to theatre-type systems, and it also provides microphone and record player inputs for public address.

RCA's Porto-Arc Projector incorporates the superior professional features and top-quality workmanship of the famous "400" projector. These include dependable operation . . . "thread-easy" film path . . . the time-proved "400" mechanism.

This rugged and completely portable 16mm projector disassembles into 5 easy-to-carry cases. It can be set up or taken down in five minutes. The suitcase type projector stand has adjustable, non-slip legs and an elevating mechanism. It provides ample storage space for its legs, cable, carbons and other accessories.

We'll be pleased to send you information on RCA's complete line of 16mm projectors.

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nothing to do but install new film runners and tension pads.

The flatness of the runners can be checked with a steel straight-edge *which is known to be accurate.* In order to see the hollows, a flashlight (preferably a "pen-light") is directed upon the casting *behind* the runners.

Remember, too, that an improperly adjusted guide roller can distort the path of the film, and that a guide-roller flange that presses too forcibly against the edge of the film will actually pinch the film and increase buckling in the gate. Excessive sideway of the picture usually accompanies this condition. The tension can be decreased by removing the coil spring and snipping a few turns from it with scissors before replacing it — a delicate operation that should not be attempted unless the film is actually seen to be buckling badly as it passes between the guide-roller flanges.

The operation of any projector is improved by keeping the guide-roller assembly free from dirt and very lightly oiled. Projectors having studio-guide rails in the gate — a poor feature from every point of view — require frequent examination and testing for wear and misalignment.

Right-Hand Edge Blur

Why is the right-hand edge of the projected picture usually blurrier than the left-hand edge?

When film is exposed to the heat of the arc pouring through the aperture, the photographic images absorb considerable heat. As a result, the emulsion normally expands more than the film-base, and each frame "pincushions" almost immediately, the bulge ordinarily facing the lamp ("negative buckling"). Since every frame has this shape during projection to the screen, the lens is focused *not* for a flat film but for a bulged film.

Now, the sound-track displaces the picture-area by about 1/10 inch. The bulging is rather gradual on the sound-track side of the picture (left on the screen) because this edge of the picture is 1/10 inch away from the gate-runner and tension pad which clamp the film flat in the gate. On the opposite side (right on the screen) the film is firmly clamped right up to the very edge of the picture-area. The bulging on this side is comparatively severe, and the distortion of the tiny photograph often exceeds the depth of focus of the lens. As a result, the right-hand side of the picture is blurrier than the left-hand side.

Because of the edge of the film-photograph on the sound-track side is 1/10 inch removed from the clamping action of the gate, this edge of the pincushioned photograph is a trifle farther away from the lens than is the opposite edge. It is just as though the film were slightly slanted in the gate. Each side of the picture consequently has a slightly different focus.

Most important, however, is the first effect — the actual *warping* of the firmly clamped edge opposite the sound-track edge. A distorted film cannot be focused sharply. With nitrate film this particular trouble was seen only very seldom; with safety film it has become a frequent nuisance. The use of short-focus lenses has also increased this defect of 35-mm projection.

Forms of Buckling

Short-focus lenses, especially if fast — and some are F/1.8 — exaggerate *every* distortion of the film in the aperture and *every* movement it may make under the impact of radiant heat.

While the pincushioning of the film-photographs is normally negative, as described above, extremely high arc currents may cause prints that have been projected 10 or 12 times to bulge out with the convex side of the frames toward the lens — reversed, or positive, buckle. This is due to progressive shrinkage of the emulsion.

Positive buckle makes good projection absolutely impossible. First, while a slightly concave frame gives a flatter field at the screen than a perfectly flat frame, a convex frame (bulging toward the lens) results in a concave field at the screen. The center or the edges of the picture may be brought into focus, but never both at the same time. Second, a positive buckle is mechanically unstable. The film may flop in and out of focus so violently that the entire picture looks blurry and fluttery. Projectionists who have operated in large drive-ins are very familiar with this trouble, and have fould by experience that nothing except heat filters in the arc beam will alleviate it.

Even normal negative buckle is greater at high arc amperages. And since the film undergoes bulging *while*

(Continued on page 31)

A Night Off From Tv?

Radio and the motion picture theatre became step-children simultaneously—according to the defeatist viewpoint. It would seem, however, that radio does not suffer from the mental circulatory disease prevalant in Hollywood.

By JACK GOULD

Radio-TV Editor, The New York Times

ON THE RADIO, station WNEW to be specific, there is a gentleman named Albert Collins who is performing a major public service. He is providing soothing, long-lasting relief from television.

Each weekday evening, from 9:30 to 11, Mr. Collins plays just about the best recorded jazz available and does it in a manner that bespeaks both singular taste and intelligence. If you want to study, read a book or tinker with a hobby, he can make a video-less evening seem slightly wonderful. . .

WNEW now has virtually a house rule that one way for radio to meet Tv's competition is to keep superfluous talk to a minimum. Mr. Collins obeys the rules. As a way of providing a framework for his show and establishing an entente with his audience he makes believe that he is operating from the moon, which enables him to look at earthly things with a bemused and detached eye. He does not overwork the gimmick, however, and most of his commentary is devoted to a word or two about the record to be played. He carries his knowledge lightly.

With television this programming philosophy is now more valid than ever. Turning on the radio should be a guarantee of relaxation. If it is, radio need have little fear of competing with jittery, frantic and loud video. Perhaps radio has overlooked its most appealing slogan: "A night off from television."

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If not, you can do so and get a better picture . . . in many instances for as little as the price of one admission per day in slightly increased carbon consumption.

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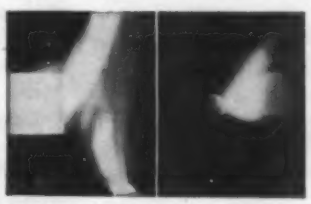

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World's Premiere Theatre Adopts "Flat" Screen For ALL Film Showings

This presentation by an acknowledge projection authority coincides with IP's views anent the proper presentation of motion pictures.

By CHARLES MULLER

Director of Projection, Radio City Music Hall, New York City

THE CINEMASCOPE projection system received what I consider to be its toughest test so far when MGM's "Knights of the Round Table" opened at New York's Radio City Music Hall with a picture 70 feet wide and 28 feet high. Despite special space considerations on our stage which necessitated using a flat screen instead of the customary curved type, we achieved excellent results with a few alterations in our standard projection equipment, plus a new RCA stereophonic sound system.

The Music Hall, with 6,020 seats, is unusual in that it is not only the largest but, so far as I know, the widest theatre in the world. Our projection throw is 185 feet at a 19-degree angle. In addition, a big drawing card here is our elaborate stage show with its highly complicated system of stage elevators. The stage show has to be considered when changes are made in our projection methods.

The necessity of conserving space in our stage fly lofts and clearing the stage of speakers as quickly as possible at the end of a picture were the primary reasons for using a flat rather than a curved screen. The maximum depth of the fly loft area available over the first stage entrance for flying the giant screen and also the center speaker of the stereophonic sound system is 50 inches. This speaker unit plus a 70-foot CinemaScope screen with the standard curve could not be fitted into the space available above the stage.

The way things worked out, relatively little change in our equipment was required in order to convert. It was not necessary, for instance, to obtain a new framework for the screen. The steel frame used for suspending our old screen is 110 feet long, 10 feet more than the full width of the half-circle stage proscenium. The effective working area within this arc for both screen and stage show is about 70 feet wide, the rest of width being masked by curtains on both sides. Our new Magnaglo-Astrolite screen is 70 feet long and 32 feet high, covering the entire length of the usable area.

Screen sizes and aspect ratio for pictures shown here during the past year varied considerably according to how well the picture was adapted to wide-screen projection with part of the top and bottom of the picture masked at the aperture plate. We experimented considerably and are still equipped to play any picture available.

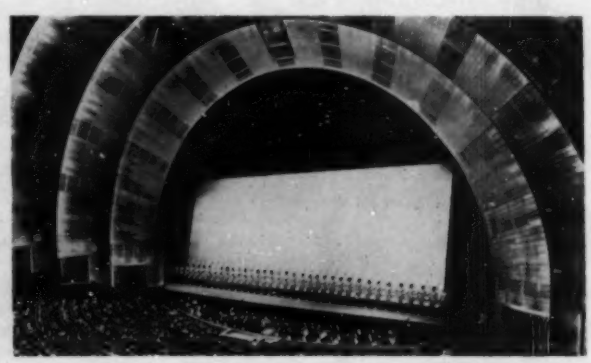
Masking Is Automatic

We decrease screen size for the showing of newsreels and trailers by means of automatic masking of black velour curtains which move in over both sides of the screen, and which also can decrease the height of the screen. The electric system operating this masking can be regulated to provide almost any screen size or aspect ratio at the push of a button.

Except, of course, for the installation of stereophonic sound, few changes were made in our projection room equipment for CinemaScope and none are now contemplated. CinemaScope sprockets were installed and also new projection lenses in addition to the anamorphic attachments. We are, however, constantly checking the light on the screen, focus, and the amount of heat absorbed by projector and lamphouse parts to determine if additional cooling aids would be needed if we were, for instance, to consider raising the amperage in the lamps.

The present projection equipment includes Simplex projectors and Peer-

(Continued on page 30)



Here is a view of new flat screen installation at the Radio City Music Hall in New York. Noteworthy is the fact that in the world's largest theatre CinemaScope productions are presented without benefit of a curved screen.

Curved- or Flat-Headed ?

In view of all the dogmatic statements made during the past year concerning curved screens and the added effect of "depth," better light distribution, *etc.*, supposed to be derived from their use, IP thinks that the story on this page about the Radio City Music Hall CinemaScope installation is very interesting.

The wide, flat screen installed there seemed to observers to give just as much feeling of depth as a curved screen with less distortion of the images on the screen. It was also felt that a flat screen distributed light better to all seats in the wide Music Hall auditorium.

It has always been IP's opinion that a curved screen is optically wrong, and that the new screen at the Music Hall reinforces our opinion. If, as insisted by pseudo projection geniuses, a curved screen is required for CinemaScope, why does the world's premiere theatre blandly switch to a flat surface?

Polaroid-IP Contest Winner:

ARMANDO GONZALES

Kingsville, Texas, Member, IA Local 604

IN a contest that enlisted the cumulative experience of the organized projectionist craft, Armando Gon-Gonzales, member of Local 604, Corpus Christi, Texas, emerged the winner by the unanimous vote of a judging panel which included the following picture industry personnel: Dr. Lewis Chubb, Polaroid research physicist; Henry Kogel, staff engineer of the SMPTE; and the editorial staff of IP.

Lest it be suspected that Mr. Gonzales won "going-away," so to speak, we hasten to mention that he was subjected to the keenest of competition by the following IA members: Ray Brian, 722 W. Maywood Ave., Peoria, Ill., member of Local 434; Paul Cota, 829 Third St., Mason City, Iowa, Local 450; and Wilfred H. Spicer, 314 29th Street, W., Saskatoon, Sask., Canada, Local 347.

Focus, Brightness Check

The award to Mr. Gonzales was on the basis of simplicity of conception and execution. IP is particularly proud of the fact that among the hundreds of entries — be it from Maine, Florida, Oregon, or Texas — there are hidden away in projection ranks those craftsmen who are both working and *thinking* each day on the job to improve the process.

Both focus and the relative brightness of 3-D imagines on the screen can be checked by means of special polarized viewers available from Polaroid Corp., but it remained for Mr. Gonzales to develop a device which not only enables the projectionists to do *both* jobs at the *same time*, but also further simplifies the job of focusing the double images by enabling him to make a quick comparative test of both.

What Mr. Gonzales did and how he did it is clearly described in the diagram reproduced on this page,

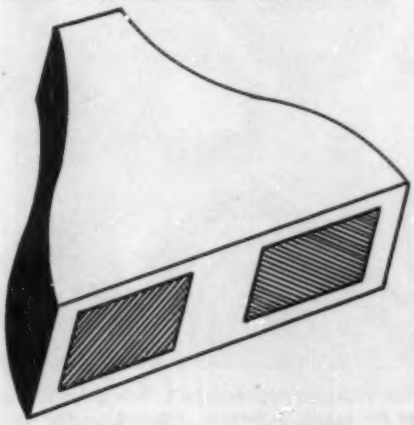


FIG. 1. Viewer used by Mr. Gonzales, details of which are diagrammed in Fig. 2.

Prize Winning Entry

Enclosed you will find drawings of a device that I made to help me with 3-D projection. What it does is this: I look through it with one eye, and I see the left and right picture at the same time side-by-side. With it I can check and see if the light from both lamps is the same brightness, and also check the focus a whole lot easier, because I see the two prints side-by-side.

ARMANDO GONZALES,
P. O. Box, 703, Kingsville, Tex.

submitted with his entry. It is not difficult to construct, and only easily-obtained materials are needed. Other projectionists may be interested in this time-saving aid and may want to construct one for themselves.

Basically, the Gonzales device puts the two stereo images side-by-side in front of one eye so that they may be compared for focus and relative brightness of each image. The path of each image as it enters the viewer and is then positioned by the mirrors for a one-eye view is clearly set forth in the accompanying diagram.

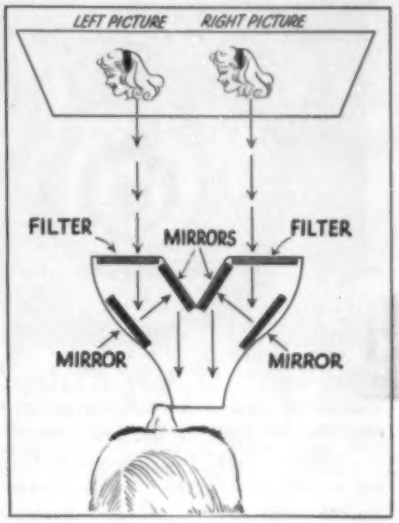
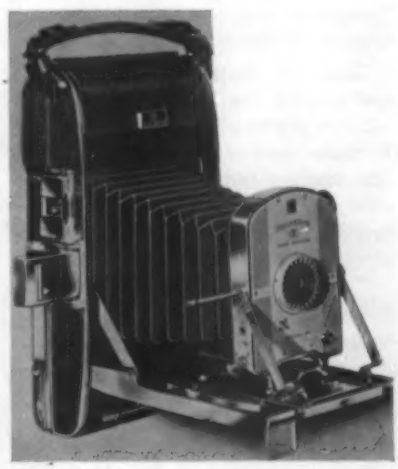


FIG. 2. Detailed diagram of images as seen through viewer shown in Fig. 1.

[The Polaroid-Land Camera develops its own pictures in one minute and eliminates the need for waiting for prints to return from the laboratory. Snapshots can be passed around just a moment after the shutter clicks. One adjustment of the camera takes care of the shutter and lens settings, and all the photographer need do is snap the shutter, pull a paper tab, and the picture is ready. Prints are black-and-white, 3¼ by 4¼ inches. They can be enlarged or duplicated if desired, adapting the camera to business uses as well as pleasure.]



Polaroid-Land Camera

IN THE
SPOTLIGHT

IN a reminiscent mood of late, we were struck by the fact that the entertainment field, craftwise, has now completed the full 360-degree cycle. At the turn of the last century stagehands were the dominant factor in the show world — with motion pictures being used as a "chaser." Then the projectionist was in the ascendancy, culminating in what seemed to be in the 1930's the near-extinction of the living stage and its stagehand practitioners. Sound pictures catapulted the projectionist, the cameraman, and every other practitioner of the audio visual art into prominence. Many and varied were the comments about stagehands being members of a "lost" profession.

But let's look at the entertainment field today. Visit any arena in which entertainment of whatever character is presented, and you are immediately aware of the fact that the stagehand *(IA parlance)* is the dominant factor in the production and execution of entertainment fare. This is not to say that the other branches of the organized craft don't contribute in full measure to their respective talents, but it is meant to point up the more or less dominance of the "stagehand" in the entertainment scheme of things as of 1954.

Now, we projectionists must face and answer the vital question as to whether the very tools that we utilized to make motion pictures the world's fifth-ranking industry are now being used with more telling effect by our brother workers in the entertainment vineyard.

• Dan Kelly, recently re-elected treasurer of Local 230, Denver, Colo., was signally honored in Masonic circles when he was advanced to the office of King in Royal Arch Chapter No. 30, and was made Generalissimo in Commandery No. 30, K. T. Another member of the Local, R. E. Waller, secretary, served in 1953 as Worshipful Master for Blue Lodge, Paul Revere 162.

• Each member of Local 330, Fort Worth, Texas, pledged 100% support to Fort Worth's United Fund by contributing one hour's pay each month during 1954. Local 330 is one of the many IA Locals throughout the country participating in organized Labor's efforts to push the Community Chest and United Community Fund drives for 1954 ahead of last year's figures.

In Memoriam
HARRY SHERMAN
March 3, 1952

• The Chicago Arena was recently purchased by CBS for conversion into a Tv center, which will give the Windy City a Tv center second in size only to the one in Hollywood. Three million dollars was involved in the deal — half for the purchase of the Arena and half for remodeling. Programming plans for the center have not yet been announced.

• Irving Merkur and Joe Clayton, prominent members of New York Local 306, were the featured speakers at the regular (March) meeting of the 25-30 Club. Production schedules prevented this department from giving a report of these most interesting discussions, the content of which will be reported in our next issue.

• The IA Executive Board held its regular semi-annual meeting at the Roosevelt Hotel, New Orleans, La., the week of March 15.

• In recognition of the rapid growth in recent years of the establishment of health and welfare funds covering union members, the AFL is compiling full information on such plans in handy pamphlet form to assist affiliated unions in the development of these programs.

• Nathan D. Golden, director of the Scientific, Motion Picture and Photographic Products Division, U. S. Department of Commerce, and honorary member of Cleveland Local 160, received the Department's Silver Medal Meritorious Service Award for outstanding accomplishment and service in the promotion of foreign and domestic trade for the motion picture and allied industries.

Nat Golden has represented the

Harmonious working relationship between fellow workers is exemplified in the projection teamwork at the Imperial Theatre in Toronto, one of the largest in Canada. Projectionists George Robinson, left, and Thomas Marsden, members of Toronto Local 173, have worked together on the same shift ever since the opening of this de luxe house 34 years ago.

United States government on many missions overseas on matters relating to the international trade of motion pictures. In 1945-46 he headed a mission to Germany for the Industrial Intelligence branch of the Joint Chiefs of Staff to secure the formulas of the "Agfa" color process, for which he was later rewarded with the Army's Certificate of Appreciation.

On behalf of New York Local 306, Charles Vencill (third from extreme right, secretary of Los Angeles Local 150, presented honorary retirements cards to Local 306 members (front center) Harry Reichline, Dave Narcey, and Marcus Pattiner. The presentation was made in the executivetive board meeting of the L. A. Local and was witnessed by the following board members (left to right) George O'Brien; Wallace G. Crowley, president; Hugh C. Smith; Clyde W. Shuey, business representative; Harold Angel; Vencill; Clem Marchand, and Albert R. Adams.

• A projection crew which has worked together for an accumulative total of 184 years may not be constituted an all-time record, but it would seem to warrant top billing in this department which is devoted mostly to personalities. The men who have compiled this enviable record of service to the industry are members of Local 219, Minneapolis, Minn., and are still in harness at the Radio City Theatre in Minneapolis. Their respective terms of service are as follows:

Horace Evans	36 years
Fred Berglund	38 years
Wood Smith	41 years
Pat McMurchie	30 years
Frank Rogers	39 years
	184 years

We think it eminently fitting to quote the exact words of Fred W. Berglund, chief projectionist at Radio City Theatre, and spokesman for the group:

"When sound first came in, there was the same mad scramble for equipment as there is now for 3-D and CinemaScope apparatus. Schools for instruction were held after the show at night and many dignitaries of national prominence in the audio-visual world addreseed us. Despite this, needles *did* jump out of the groove; lips *did* move when they shouldn't; records *did* have cracks that didn't show on the surface; storage batteries did run dry and go dead, and 6-pole switches were forgotten, oh! so many times.

"Let's go back a decade or more to the days when it was against the law to have a motor-driven projector; when 1,000 feet was the limit on one reel; when the lamphouse was on tracks, to be pushed over to form a stereopticon; when illustrated songs were part of every de luxe performance.

"Finally, motors were permitted (that is, if the "operator" furnished them himself). I can recall one theatre I worked during these balmy ? days. It had a projection (?) room built out in the alley on the back end of a former grocery store. It was built on stilts and the floor sagged. A motor was mounted on the floor with a belt running up to a makeshift motor-drive attachment. When more "speed" was wanted, you shifted your weight closer to the motor, thus tightening the belt.

"What a long way this business of ours has come since then! Standard equipment formerly consisted of one machine and an AC compensarc. Here is what we now have at our theatre:

(a) 2 Simplex X-L projectors, equipped with RCA, Ashcraft lamps, Simplex penthouses and Selsyn motors

(b) 1 model 60 Brenkert projector with Peerlees Magnarc lamp (all three are equipped with 5000-ft Simplex magazines)

(c) 1 Stanch-Hoffman reproducer

(d) 1 Altec relay rack with 3 amplifiers and monitor

(e) 1 Altec A126A amplifier, plus two Western Electric No. 87 amplifiers in multiple

(f) 1 Sonex booth monitor

(g) 3 Altec E18 DC power supply units

(h) 1 Hard of hearing amplifier, wired to the back row of seats on the main floor

(i) 1 transfer panel to supply voice to a separate public address system when the regular horns have been raised for stage presentations

(j) 1 microphone control panel for p. a. system.

(k) 1 double-deck Chicago slide projector

(l) 1 double-deck Brenkert effect machine

(m) 2 300-amp motor generators, lo-

Projection staff at Radio City Theatre, Minneapolis, Minn., members of Local 219, who have compiled a total of 184 years of service working as a team. Reading from left to right: W. H. Smith, Frank S. Rogers, Fred W. Berglund (chief), Horace J. Evans, and Pat McMurchie.

cated in the basement engine room, with remote controls in the projection room

(n) 1 Paramount intermediary Tv system. This is located in a room by itself, adjacent to the projection room and connected to it by a doorway. A metal film chute goes from the Tv dryer, through a wall and directly to one of the projectors.

(o) 1 Huff Hydro carbon cooling system for the positive jaws on the Ashcraft lamps

(p) 1 Spencer air-cooling system. This is piped directly to the aperture plates on the two CinemaScope projectors. The blower is mounted on the ceiling above the projectors. The compressor is located in another rom adjacent to the Tv room.

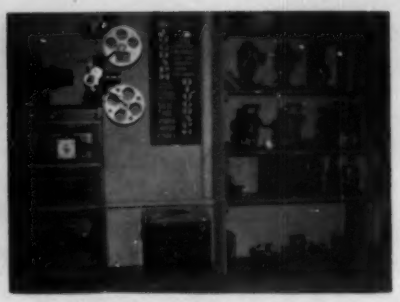
"In addition, we have lamphouse and projection room suction fans, as well as the regular house ventilating system. Quite an array of stuff, as compared with the old days.

"We have two screens — one is a Walker Silver screen on which we show a 33-ft. picture. The other is a Miracle Mirror CinemaScope screen on which we show a 25 x 60 ft. picture. We use approximately 95 amps on a 10-mm positive carbon, and our throw is 164 ft. for the regular picture, and the CinemaScope sheet is 10 ft. back of that.

Manifold Talents

"We could go on and on with these reminiscenses, much of which probably would be considered trivia. However, we would be remiss in our duty were we to overlook mentioning that one of our members, Frank Rogers, is the possessor of a very special talent. He is an artist of ability and he has produced some very beautiful effects which have been used as a part of our regular productions. Incidentally, he is the designer of the cover page on the IA Convention program used at the 1952 Convention held in this city."

• The 25-30 Club (New York) meeting scheduled for June 19 next will be the occasion for the presentation of hororary membership awards to Paul Reiss, supervisor of carbon arc sales for National Carbon Company, and Charles F. Horstman, supervisor in charge of sound and maintenance for RKO Theatres. This special meeting will be held at the Grand Street Boys' Clubhouse in New York City, and is expected to be a gala affair.



The old, or "museum", corner of the Malkames collection

Unique Cinematic Collection

IP is proud to present the chronicle of Don Malkames (charter member of Cameramen's Local 644, New York City, and also a licensed projectionist in Yonkers, N. Y.), who has one of the finest private collections of cinematic lore extant.

This the story of an extraordinary fellow whose counterparts look back on the early years of motion pictures with more than affection and nostalgia. They are anxious that the film, equipment and memorabilia of the movies' turbulent youth be saved from almost certain destruction.

One of the outstanding private collectors of these historic mementos, Don Malkames of Tuckahoe, N. Y., is a top-flight motion picture cameraman, and personifies, perhaps, the ultimate in devotion to this unusual calling.

Mr. Malkames revealed that he had fallen victim to the movie virus at the age of five when he was given a toy "magic lantern," and was a lost soul at the age of 17 when he promoted himself a professional projector and some vintage numbers like "Life of Our Saviour" and "Last Days of Pompei." After running a traveling show he convinced his father that he deserved a chance to make his way in the film world rather than go to college. The West Coast, with the then booming film industry, was his next stop.

Malkames returned to the East Coast in the early 30's, and in 1938 he began his film and equipment collection which today is one of the most outstanding in private hands.

Exemplary Housekeeping

One section of his spotless basement is devoted to a combination film workshop and display area for his equipment collection. A wall contains neat rows of projectors, each a milestone in cinematic history.

One niche contains an Enterprise dissolving stereopticon, an early attempt to make projected pictures move. In the 1897 section can be seen a Selig "Polyscope," a "Jenkins "Phantoscope," and a Colt "Criteriascope." A Gaumont "Demeny" projector of 1898, gleaming with its brass polished, sits on a nearby shelf.

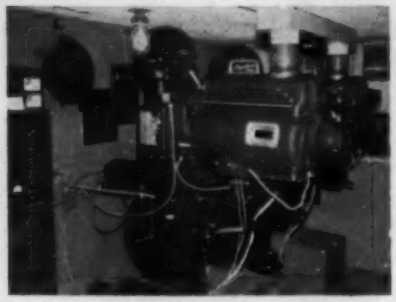
Advances In Art Shown

The improvement of equipment can be seen in a Powers "Cameragraph," of 1904, a 1900 "Motiograph," and a 1910 Edison "Kinetoscope," one of several of the famous "Kinetoscopes" of various periods which he owns. Cameras of all ages stand about the room. One, well preserved and of obvious age, has a possible distinction.

"I'm reasonably certain it's the camera D. W. Griffith filmed 'Birth of a Nation' with," Malkames stated, stroking it paternally. "And this," he continued, moving to a projector hoary with years, "is where the term 'limelight' came from." Opening it he pointed out the stick of lime which when heated, turned incandescent, producing an intense white light.

Personal Preferences

Malkames prefers to collect films which are *unusual* rather than just *old*. An example would be the hand-colored trick film by George Meilies of 1904, or "The Bold Bank Robbery" (Lubin, 1903), which was a bold copy of "The Great Train Rob-



Malkames' Modern Installation

bery," of which he owns an *original* Edison print.

In his beautifully-appointed miniature theatre with dual projection setup, he can run off films from his collection of more than 350 of historical value. Lumiere's "Arrival of a Train," Griffith's "Battle of Elderbush Gulch," or Edison's 21-mm-wide "The Wicked Elf," can be screened with ease, sometimes on the original equipment.

One projection room is equipped for 21-mm films which were developed from 1907 to 1910 by Thomas Edison for home showings. Malkames has examples of this interesting variant still in their original containers.

The number of theatre fires in France in the early part of the century prompted the development there of 28-mm devices for showing fireproof acetate film. Laws were passed forbidding the use of nitrate film on 28-mm machines, and France and Germany produced acetate films in goodly numbers. Production began to cease around 1922; but Malkames possesses good specimens and frequently screens them.

Films of this early era are not exclusively shown in Malkames' little theatre, for he has installed modern 35-mm equipment. It would not be unusual for "Policeman's Love Affair," (Lubin, 1903) to be followed by the latest wide-screen or 3-D production.

Museum's Miniature Theatre

Pension Protection—Goal of Labor

The relationship between Social Security benefits and private pension plans is very important. This is the sixth and final article in a series on pensions which reflect the official view of the AFL.

VI

BENEFIT schedules of some pension plans have been constructed in such a way as to make certain allowances for benefits available under the Federal Old Age and Survivors' Insurance program, commonly known as Social Security. Generally speaking, this has been done in one of two ways: either through the use of an "integrated" formula; or through a so-called "offset" formula.

An integrated formula is one which, in relating benefits to earnings, provides a higher percentage benefit on that portion of earnings which is in excess of the Social Security cut-off level (formerly $3,000, now $3,600 under the 1950 amendments) than it does on the portion below that level.

For instance, the plan might contain a formula which calls for a benefit of 1% of earnings of up to $3,600 a year, plus 2% of all earnings in excess of $3,600, for each year of service from entrance until 65.

Formulas of this type are used as a means of providing higher-paid employees with a larger pension than would otherwise be possible under Internal Revenue regulations. These regulations provide that no employee can receive a greater pension in proportion to his earnings than any lower paid employee, assuming identical periods of service and taking S. S. into account. Otherwise, employer contributions to the plan will not be tax exempt.

The "Offset" Formula

Some plans take account of S. S. benefits through the use of a so-called automatic "offset" formula, wherein the benefit schedule of the plan is stated as a certain amount or percentage *inclusive* of the primary S. S. benefit. In other words, the employer promises to pay only the *difference between* what the worker gets in primary benefits and the amount the formula sets forth.

Unlike the "integrated" plans described above, "offset" plans are designed to compensate automatically for future changes in S. S. rather than just to take account of the existing level of S. S. benefits. Any improvement in OASI benefits, regardless of whether or not employer contributions to OASI are increased, will, with the offset device, reduce the amount of benefits payable under the plan, and the employer's cost will drop accordingly.

"Offset" Disadvantages

The level of benefits available through S. S. will, of course, always have an implicit bearing upon the level of benefits which a union might desire to provide through a private negotiated plan, even though S. S. is not referred to in the terms of the plan. Obviously, a private pension of, say, $80 a month would be much less satisfactory to a union group if there were no underlying structure of S. S. benefits to which it might be added.

Also, inasmuch as the negotiation of a pension plan involves the segregation of a sum of money which could otherwise have been used for a cash wage increase, an increase in S. S. benefits may make it less desirable to sacrifice a future wage increase in order to add further to the level of private pension benefits.

Nevertheless, to express this relationship in the form of an automatic offset gimmick in the benefit formula is a very questionable practice. In the first place, it implies acceptance of the proposition that the level of combined benefits set forth in the plan is so nearly adequate that any increase in S. S. during the term of the agreement can be spared by the workers so as to be used to cut the employer's costs rather than to provide a higher level of benefits. Few plans now provide benefits high enough to justify this proposition.

Employer Support Lacking

Third, the argument, advanced by some, that such provisions would induce employers to lend their support to, or cease to oppose, necessary improvements in the S. S. system has not been borne out by the facts, and is not likely to be.

Over the long run, the cost to the employer of a certain level of pensions, provided through a private plan which makes no provision for vesting* — and which is loaded with so many maximum limits and restrictions on eligibility,

* The word "vesting" refers to a complete and consumated right which cannot be taken away.

(Continued on page 29)

"Omnisphere" — the *True* Total Cinema?

In line with its long-established policy of providing a forum for anybody having anything interesting to say about the projection process, IP herewith presents one point of view anent the "total" cinema, supplemented by its own views thereon.

By JOZEF COHEN
University of Illinois, Urbana, Ill.

THE *TOTAL* cinema made its modern debut in the form of Cinerama, utilizing three synchronized projectors and about 146 degrees of projection arc. Here was demonstrated conclusively the importance of the peripheral vision in achieving the enormous enveloping effect which transports the audience outside of the theater.

The total cinema is very old, and was considered almost as soon as motion pictures were developed. Even before, still projection in 360°, using multiple projectors, was demonstrated in the United States by the Chase Electric Cyclorama Co. of Chicago in 1899. In 1900, Grimoin-Sanson placed ten synchronized cameras in the basket of a balloon and drifted over Paris, recording the first panoramic motion pictures. Later the film was shown by ten synchronized projectors in a complete circle. The theater was at the Paris Exposition of 1900, and was called, as you might expect, Cineorama.

The "Moussard" Principle

During the last half century there have been many attempts to develop cameras and projectors for pictures on a wide, curved screen. Almost all of these are based on the so-called principle of Moussard, which is the same as that incorporated in "still" panoramic cameras which photograph high school graduation classes.

In the 1930's, Eastman Kodak Co. perfected the Widescope camera on the same principle; Fred Waller, the developer of Cinerama, has many patents on similar cameras. Because it is inherent in the principle that the lens shall rotate on its rear node, cameras of this type are impractical, for only one very narrow segment of the picture can be projected at any one time. Waller finally adopted three projectors, and we know the result as Cinerama.

Although the enveloping principle was properly demonstrated in Cinerama, the three projectors do not synchronize, the color temperatures* of the three projection lamps are not equal, and the three portions of the screen are therefore clearly distinguishable. Also, it was my experience that the enveloping effect could be broken if the head is shifted to take in even a portion of the outside periphery.

To counter-effect these difficulties, American Optical Co. (Dr. Brian O'Brien and Dr. Robert E. Hopkins) has designed a new system, called Todd-AO, which I understand utilizes 65-mm film and a wide-angle lens of about 140° of projection arc. This film size is undesirable, since it necessitates the forming of new processing machinery, and also the picture should at least be capable of coming out farther around the audience.

I believe that the problem of projection of motion pictures on a circular screen can be accomplished for any projection arc, up to 360°, using only one projector, 35-mm film, and several ordinary stock lenses. This camera and projector are the subject of a patent application, and although a disclosure cannot be made here, the patent application is available to proper and responsible people.

Projection "Dreamboat"

This system, which I have called "Omnisphere," will take and project motion pictures of the width of Cinerama, or a complete half circle, or even a full circle, if anyone would want it.

I cannot emphasize too strongly that there is exhibited not the slightest spherical aberation, and that the definition of the picture so produced is equal to or better than that found in ordinary theater projection. Further, the nature of the optical system permits the most efficient use of the light source, so that the brilliance of the image is equal to or better than ordinary theater projection.

"Omnisphere" projects pictures in motion simultaneously in 180°.

*Those who wish to pursue this matter of color temperature in greater detail, are referred to the article "Color Temperature: Origin and Meaning," by F. T. Bowditch, IP for November, 1947, p. 5.

IP Eyes "Omnisphere"

WE HAVE checked the history given in the opening paragraphs of Professor Cohen's leter. But this, after all, is not particularly important. We certainly do not agree with his statement that the Cinerama projectors do not synchronize and that the color temperatures of the three lamps are not equal.

Most certainly the projectors *do* synchronize, to the best of our understanding. And there is no special reason why the color temperatures of the three arcs should be noticeably different, nor even that the three prints which are synchronously projected should not be identical in color, if careful processing is carried out.

"Invisible" Joins?

We agree with Professor Cohen, however, that the joints between the center picture and the side pictures are visible, despite the action of the so-called "gigolo". We rather doubt that these joints can be made invisible in any practical and economic system using multiple films simultaneously.

We are not in agreement with Professor Cohen as to the enveloping effect. There is only a relatively small portion of the house in Cinerama where one is completely "enveloped" by the picture. From the sides and back of the orchestra, and from the balconies, there is certainly no enveloping effect.

As to the Todd-AO process, we do not regard this as being a member of the "Cinerama family". It is more closely related to CinemaScope, but differs in using a larger film and there-

fore producing sharper and less grainy pictures. It is not known how far the public will respond to such an improvement in picture quality. In *de luxe* houses such a system might be advantageous even though costly.

Large-Area Light Dispersion

In closing stages of his description, Professor Cohen speaks of using several conventional lenses on one projector with 35-mm film and a single projection arc to produce 360-degree pictures! We can only observe that this is a good trick if Professor Cohen can bring it off—particularly if he can spread the light of the arc through an optical system and several lenses over five or ten times the conventional area and still have just as bright a picture. We shall remain on the sidelines relative to this claim until it is more fully explained and a conclusive demonstration is given.

Humans' Field of View

As to the value of 180-degree pictures, psychologically this might even be undesirable. The field of view of the eyes is limited: people do not like to keep turning their heads all the time; and action splattered over large horizontal angles and areas may be distracting rather than dramatic. This, however, is conjectural. And the answer must await, at the very least, experimental proof.

New Products for the Industry

ALL-PURPOSE RCA PLASTIC SCREEN. A new vinyl plastic, aluminum pigmented all-purpose screen adaptable to standard "flat," wide-screen and 3-D projection has been marketed by RCA. Called the Dyna-Lite Silver Screen, it is made of a special formula vinyl plastic which is flameproof, tearproof and highly moisture resistant. A special metallic coating applied after the screen is fabricated assures a uniform reflection surface for 3-D. Another feature is its imperceptable seams, it was said. The seams are sealed by means of electronic equipment which leaves the entire seam area smooth, flat and in the same plane as the rest of the screen surface. Also, the entire surface of the screen is aluminized, including the seams. The screen is available in sizes up to 30 feet by 60 feet, either perforated or unperforated, the later being recommended for 16-mm.

BEST'S PORTHOLE FIRE SHUTTERS. A new line of porthole fire shutters, designed to meet all state and city inspection laws for projection room operation in theatres, schools, churches and all types of auditoriums, is announced by Best Devices Co., Inc., 10921 Briggs Road, Cleveland. Four distinct types of shutter are available in standard sizes or on special order for picture ports, picture and stereopticon ports, observation ports, and spotlight ports.

Each shutter consists of a welded steel frame to hold a ¼-inch steel drop-plate and glass. Simultaneous closing of all Best shutters in a projection room may be accomplished by a semi-automatic red-brass control bar.

Best's porthole fire shutters mounted in a projection room.

AMPEX TAPE RECORDER REEL. A new 1200-foot reel, using the standard National Association of Radio and Television Broadcasters hub to eliminate tape stretch, breakage, and pitch changes as the tape approaches the end of the reel, has been announced by Ampex. The new 8-inch, all-metal reel can be used on any machine which makes the NARTB hub. Until now, the critical recordist has had to use a 10½-inch reel, regardless of the length of the tape, to avoid the effects caused by the extreme tension of the tape near the end of a small reel.

REEVES LIFETIME MAGNETIC TAPE. A magnetic tape guaranteed never to break or curl when used under normal conditions of recording or playback has been announced by Reeves Soundcraft Corp., New York. It is claimed that the tape owes its permanent qualities to a newly developed magnetic coating and to a base of Du Pont "Mylar" polyester film. Break-strength of the new base is said to be 2½ times as great as standard cellulose acetate base tape.

NEW DUAL REWIND. Developed and marketed by Carroll Hathorn, projectionist at the Victory Theatre, Dayton, Ohio, is a new dual rewind machine designed to accommodate reels from trailer size up to 5,000 feet, taking two reels simultaneously. The rewind is especially valuable in synchronizing 3-D or stereophonic reels when patching.

By Way of Definition

Color temperature is that degree of luminescene produced by a specific light-emitting source (carbon arc, tungsten, etc.) which, in turn, is based upon *(a)* the nature of the light source and *(b)* the degree to which it is heated.

The color range extends from a dull red to a blue-white, and is subject to minute variations which are dependent upon the degree of care expended upon the operation of a particular equipment (s). Especially is this true when two motion picture projectors are used and the *instantaneous* changeover from one mechanism to the other is employed.

Everyday Examples of Color Temperature

The glowing coals of a furnace, the heater element of an electric toaster and the filament of an incandescent lamp are everyday examples of luminous substances that have a color related to their temperature. When these substances become hotter and hotter, their color progresses from a dull red at low temperatures to a brilliant white at higher temperatures.

Scientists have learned to use this characteristic of heated substances to set up an exact scale with which light may be compared and exactly described. For example, the similarity between the light of the sun and that of a high-intensity arc can be demonstrated by the fact that they have approximately the same color temperature.

What's Your Problem?

Projectionists whose problems appear below will each receive a $5.00 check from IP. We'd like to know "what's YOUR problem?"

QUESTION: Perhaps you can help me settle a problem which I have had for the past five years. I am troubled with a downdraft in each lamphouse. This is bad during the winter months, but it really gets troublesome when the attic fans are in use in the theatre auditorium. These fans exhaust from openings directly over the balcony and into the attic.

In the past, I was able to stand the "smog" in the projection room because I used the 1 kw. lamps, but recently I installed Brenkert Enarcs using a larger trim and more amperage. Now I have to leave the projection room when these attic fans are in use. I clean my lenses, and within two hours they are completely covered with a blue-white soot.

The lamp stacks are attached to 6-inch ducts which are directly over each lamp and run up through the attic to the roof and extend about 2½ feet above the roof. Just above each lamp I have installed the Strong back-draft section of pipe (grilled pipe with the cone in it). This seems to have no effect on the draft.

Also, in the center of the projection room is a 20-inch open-air duct opening onto the roof. Although I suggested to the manager of my theatre that a 3-speed fan be installed in this duct, and that the two lamps ducts be joined to the large (20-inch) air duct, nothing has been done about it. You probably know how theatre exhibitors are — they will pay $150 to have new shelves built for the concession stand but balk at spending an extra dime on the projection room.

LAWRENCE JOHNSON
Aggie Theatre, Stillwater, Okla.

ANSWER: The suggestion you make in the last paragraph of your letter leads us to think you have hit on the best method of solving your problem. The downdraft you complain of is most serious in the summer when the attic fans are in use, leading us to suspect that there is a year-'round situation whereby air is sucked from your projection room by the theatre's ventilating system, tending to cause a partial vacuum in your projection room that sucks air down through the ducts.

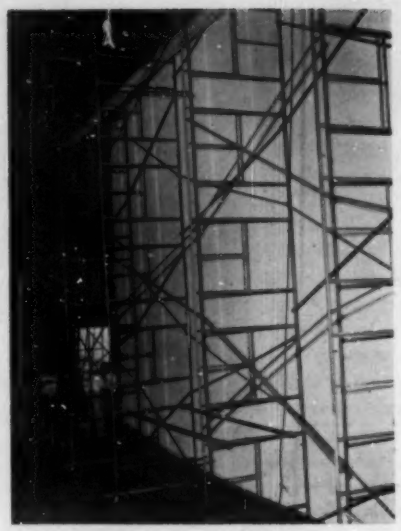
Although the degree of downdraft varies from winter to summer, and there is no way for us to gauge its pressure, it is probable that if the two ducts were connected to the larger open-air duct that you describe, and a motor-driven fan installed, there would be no more downdraft.

Something else to check on, however, is the present location of your exterior exhaust stacks or ducts. It has often been found that prevailing winds, if of great enough velocity and blowing in the direction of the exterior lamp exhaust stack, can form an impasse for the exhausted gasses, creating a backdraft and bringing the fumes back into the projection room.

The British have contrived a rather ingenious device for exhausting projection room fumes that has the added advantage of resisting backdrafts. The device, known as the Arvcent, is described as follows by an English projection expert:

The principle involved is that the ventilating system is manufactured as a unit to be mounted on the top of each projection lamp; the fan unit, of the turbine design, draws the air across the motor unit itself and directs the stream of air into a jet unit under pressure. The jet unit blows the air into the main exhaust chimney at great force so as to cause a vacuum behind, which induces the fumes from the arc in a controlled exhaust movement. Therefore, it is certain that the objectionable fumes which deposit themselves on the lamphouse parts and mirror generally are, by the new system of ventilation, induced by controlled draft to the open air.

Brockliss "Arcvent" mounted



Steel scaffolding, made up of lightweight tubular steel frames and cross braces is shown supporting a large CinemaScope screen at the Grove Theatre in Freeport, N. Y. It rigidly maintains a predetermined curve on a 24- by 64-foot screen. The steel framework, manufactured by Safeway Steel Products, Inc., Milwaukee, Wis., is similar to that sold for light construction work to the building trades.

Wind Direction, Velocity Immaterial

It follows naturally, also, that prevailing winds at the outside of the theatre do not interfere with this ventilation, due to the force of the jet unit in operation. It necessarily follows, also, that the Arcvent does give controlled ventilation irrespective of weather conditions and high efficiency concerning the burning of the arc, which is undisturbed by any exterior elements.

In addition, the fan unit also (which should be left running all day whether the projection lamp is burning or not), ventilates the projection room and in the case of an accidental fire would disperse the fumes quickly from the projection room, since the fan unit is situated near the film mechanism; also, the unit being left in operation all day cools the working parts of the lamp when not in use. Thus the projection lamp parts are ready for handling without any undue heat due to the extra cooling which is induced by the system.

A Projection Room "Must"

We found that mirrors are kept very much cleaner and do not require the usual wiping. Altogether, this unit invention is being received by all projectionists as a very useful asset to their working conditions. We are enclosing a copy of a letter received from a projectionist who is very impressed with the capabilities and performance of this apparatus. We should also mention that we have received a further letter from a second projectionist which points out that the Arcvent unit should be installed in all

projection rooms, as expense incurred for installing the units is as nothing when it is considered that human lungs cannot be bought at any price.

Our attention was drawn to this problem by the projectionist of the R.M.S. *Coronia*, who visited your office and indicated he had seen the Arcvent in operation while his ship was docked in Liverpool.

Enclosed in Mr. Durban's communication is the following letter from the manager of a British theater in the provinces:

Works Out Perfectly in Practice

We are in an exceptionally exposed position, standing on a hill with no sheltering building near and from 5-9 miles of open country in any direction. On the southern and westerly sides is a high range of hills with Salisbury Plain on the other side, so the prevailing winds come with a fierce blast and the first object to stop them is our theatre.

So we have had a fierce down-draught in the Arcvents. No mirror has been shattered through this, and it used to be the normal thing to carbon-up with the fumes from the other arc blowing into one's face: on windy days fumes and smoke would pour out of the lamphouses. I am happy to say this is now a thing of the past, and the air in the projection room is clear and dust-free. What did cause some surprise was the definite increase of light towards the end of the performance, due to non-clouding of the mirrors.

* * *

QUESTION. Thanks for your recent article on splicing CinemaScope film (Dec. 1953). There are a few questions I would like to ask though. First, I have not had much luck with the wire brush. Could you help me out on this. Second, will you find enclosed some splices that came loose in the projectors while we played "The Robe" in our town. Two of these caused me to stop the show and rethread. The rest came loose on the rewind. I have had much trouble with patches of this kind before. Could you please tell me why the exchanges have discontinued the one-hole splice.

LAMAR MCKINNON,
Rose Theatre, Thomasville, Ga.

ANSWER. You do not state in your letter exactly what trouble you encountered in using the wire brush. However, its manufacturer states that the edges of the wires sometimes become slightly bent and tangled after a period. This can be corrected by carefully twisting the strands with a circular motion or, if necessary, by sniping off a small portion.

You also mention that some exchange splices came loose while you were projecting "The Robe." The samples of broken splices you sent were made on an automatic splicer which cuts the film in a slight arc,

when you use
SUPER-SNAPLITE
projection lenses

Yes "MOVIES ARE BETTER" and they're "BETTER THAN EVER" if you use Super Snaplite f/1.9 Projection Lenses. These superb lenses give you maximum light, maximum sharpness, and maximum contrast . . . maximum viewing satisfaction for your patrons.

True speed of f/1.9 in every focal length up to 7 inches.
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avoiding a patch over the sprocket holes. This type of splicer usually gives good results with the standard type of film not employing magnetic sound and should do equally well with CinemaScope provided the film is properly scraped on both sides and the splicer is in proper adjustment.

A disadvantage is that, since the operation is automatic, it is difficult for the inspector to make absolutely sure that the magnetic striping has been completely removed from the sprocket hole area and the correct amount of cement applied. It may be that further changes in addition to resetting the register pins will be necessary in order to better adapt this splicer to CinemaScope film.

The wire brush is very important in projection-room splicing of CinemaScope film. The sprocket-hole area is delicate and easily torn if scraped too much with a blade, making the brush most valuable in removing traces of the magnetic stripping. Also, the particular pressure clamp arrangement in the Neuscope bench splicer, which is designed especially for CinemaScope film, makes it necessary to condition the splice area with the wire brush if the best results are to be obtained.

CinemaScope Lens Mount

A universal lens mount, designed to simplify the problem of switching from CinemaScope to standard projection during a show in a projection room equipped with the usual two projectors, has been developed and marketed by Projection Products, 146 East 151st St., New York City.

The attachment is designed for use with Simplex projectors using lenses with 2-25/32 inch diameter lens barrels. Space considerations in the projector prevent using a similar lens mount capable of accepting a 4-inch lens because there would not be sufficient space for the vertical and horizontal adjustments of the larger lens which the universal mount makes possible.

According to Dave Corbett, head of Projection Products, the need for this lens mount may be stated briefly as follows: If an anamorphic attachment is removed from a projector to show a newsreel or other type of standard film, it will be found that the lower edge of the screen image is raised slightly so that the masking will not meet the edge of the picture. Since masking moves in from the sides or down from the top of the proscenium, but not up, it is necessary to compensate for this horizontal displacement by slightly changing the position of the lens then in the projector.

There is also a vertical or side-to-side displacement. In addition to becoming smaller, the image on the screen is displaced vertically by from 1 to 3 feet when a standard film is projected. This displacement is also compensated for.

Corbett, who has had 15 years experience in the repair of projection machinery, opened his present well-equipped machine shop in 1950. He does a variety of repair work for customers throughout the country in addition to research and development work and the manufacture of special parts. When the rush for 3-D equipment was on last year, Projection Products did a brisk business supplying mechanical interlocks and 25-inch magazines. The shop is now also engaged in producing experimental rear projection equipment.

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AND YOU USE THE BEST!

That is why Ethyloid is the standard film cement in all Hollywood studio cutting rooms. Ethyloid is the projectionists' friend in thousands of theatres in the United States, Canada and abroad. The Army and Air Force Motion Picture Services also use Ethyloid in large quantities — domestic and overseas branches.

We do not sell all the film cement used throughout the world — but we do sell a very large percentage.

Give Ethyloid Film Cement a try and you'll use it always. Make your next film cement order Ethyloid, you'll be glad you did, especially when you splice 3-D and CinemaScope prints. We guarantee you won't have to reinforce your splices with cellulose tape to make them hold. You're in trouble when 3-D or CinemaScope splices come apart during projection. (They say it has happened!)

All theatre supply dealers in the United States from coast to coast sell Ethyloid Film Cement. In Canada get Ethyloid from all branches of Perkins Electric Co., Ltd.

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PERSONAL NOTES

CLARENCE W. LINDROSE, JR., of Hertner Electric Co., Cleveland, has been appointed to the firm's Transverter sales and service field staff. He will work out of the Cleveland factory office, covering the continental U. S. and Canada, and call on National Theatre Supply branches in 29 major cities, as well as the General Theatre Supply Co. in Canada.

EDOUARD P. GENOCK has been appointed head of Tv production at the Eastman Kodak Co. Genock has been engaged in a variety of editorial and technical work for radio, motion pictures and Tv over a period of 25 years, having been active with March of Time, Paramount News, Telenews and others.

JAMES S. BROWN has been appointed division manager of a newly established Chicago-Milwaukee sales territory for Ampro Corp., Chicago, manufacturer of motion picture projectors and tape recorders. Formerly a midwest territory representative, he will now be responsible for dealer appointments, dealer salesmen training, and the conduct of merchandising programs in his new territory.

DR. JOHN G. FRAYNE, engineering manager of the Westrex Corp., left Hollywood recently on a two-month round-the-world trip, which will include visiting ten of the countries where Westrex has supplied large quantities of theatre and studio equipment. Dr. Frayne has been closely associated with sound reproducing and recording activities in the motion picture industry since 1929, and is an expert on magnetic sound.

JOHN JIPP has joined the Ampex Corp., Redwood City, Calif., as manager for instrumentation recorder sales for the firm, which also produces theatre sound equipment. Jipp was formerly with Motorola, Inc., for which he established a West Coast parts and service depot.

WILLIAM E. ROBERTS has been elected to the newly-created office of executive vice-president of Bell & Howell. A 17-year veteran with the company, Roberts has been vice-president in charge of operations since 1951. During World War II he was responsible for the production and sale to the government of Bell & Howell optical and photographic equipment.

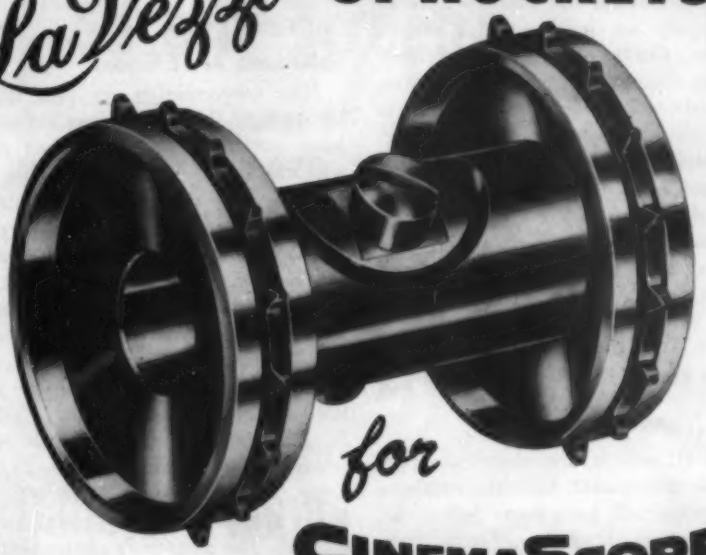
Mobile 3-D, 16-MM Theatre

The Ramsdell-Victor 3-D system has been installed in what is believed to be the first mobile three-dimension theater in the world. The 16-mm projectors by the Victor Animatograph Corp., Davenport, Iowa, are being put to work for industry by the Cincinnati Lathe and Tool Company for the showing of its 15-minute, 3-D film, "A Way of Thinking." Produced by Floyd Ramsdell, of Worchester Film Corp., Worchester, Mass., the film dramatizes production methods of C. L. & T. and is being shown to metalworking shop operators, vocational school leaders, and industrialists.

Two mechanically-linked Victor 16-mm motion picture projectors are installed behind the driver's seat of the "Magic Carpet" 14½-ton coach. The theater seats eight.

The famous Victor Safety Film Trips play a vital part in projection of this valuable three-dimension venture by C. L. & T. The Trips (standard on all Victor 16-mm projectors) automatically stop the projectors in case of film emergency, and if a loop is lost during projection, the entire system is protected until adjustment is made.

LaVezzi SPROCKETS



for CINEMASCOPE

The new wide screen presentations demand rock steady projection which for years exhibitors have been expecting and getting by using LaVezzi sprockets. In addition, the clean burr-free teeth are easier on the film—an important factor with the narrow perforations of the four stripe magnetic film. LaVezzi sprockets are properly engineered to resist wear—and are hardened for that extra margin of usable life. For better projection and peace of mind get LaVezzi and be sure!

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Brush-up on Fundamentals

Rectifiers for Projection

AN ELECTRONIC rectfier is a conversion device, an electrical "One-Way Street" as it were, which will allow current to flow in one direction only and blow the whistle if it tries to obey its impulses and run back again. This conversion, or rectification, is really a simple business and the circuitry necessary to turn the trick is quite as simple.

Projectionists and theatres have no monopoly on unidirectional electric power. Electro-plating, battery charging as done at the corner garage, general laboratory work, even home radio and television sets, all need some sort of device to change the alternating current from the public power lines into direct current.

However, in this piece we are concerned only with rectification as regards theatre projection requirements and, while the film business twirls like a Dervish full of hashish, with a few crystal ball looks at the future.

The Transistor Era

As IP sees it, the electronics part of the amusement business within a few years will have come full circle, from the crystal of the old-time "Hey, I got me Pittsburgh!" crystal radio set to the ultra-modern germanium, silicon or whateverelse "crystal" transistors of tomorrow.

To the projectionist, no matter how big or how small his theatre, rectifiers provide him with the direct current he must have and cannot get from the alternating current city mains. His principal demand is for DC amperage for operation of carbon arcs and sound amplifiers.

Rectifiers play the field. They exist in a plentitude of sizes, shapes and types, from the aforementioned cat's whiskers and radio crystals of almost pre-historic time (that's BC — Before CinemaScope) through mercury vapor tubes, diode vacuum tubes, and dry plate rectifiers to the new transistors. While these latter, so far, have had little application in the picture business (except in Hollywood where the big brains run on very low amperages anyway), the tiny transistor, with its amazing stability and unbelievably long life very rapidly is replacing other more costly and less efficient units in many fields. However, excluding generators, the diodes (or two filament) tubes and the dry plate rectifiers, either the copper oxide or the newer selenium types, still provide for immediate projection requirements. The crystaline transistors, so the omens say, are still in the not so distant future.

Seleniums Are Efficient

Most projectionists are quite familiar with diode tube rectifiers but many have not had a chance to get cozy with the relatively new seleniums, although projection processes requiring very high amperages demand rectification devices far beyond the capabilities of the usual theatre-type vacuum tube. Seleniums can handle the heaviest projection requirement. One top manufacturer in the field, for example, the Federal Telephone and Radio Corp., operates its Nutley, N. J., plant around the clock with seleniums. The plant pulls some 21,000 amps. Variable loads from zero to 5,000 amperes are under pushbutton control. The company's electro-plating selenium rectifiers supply up to 10,000 amps from a 220-volt, three-phase, 60-cycle source. On that basis a selenium rectifier should handle easily the 180 amps of 3-D or CinemaScope or the sometimes heavier drive-in demands.

[TO BE CONTINUED]

Projection Optics And Curved Screens

A GOOD projection lens is designed to form an image on a plane surface. The light rays contributing to the formation of *each point* on such image (italics ours — Ed.) emerge from the aperture of the projection lens, 2 inches or so in diameter, and 100 feet or more away.

The cone of light thus formed has a very small included angle and, in consequence, a displacement of the screen a few inches from its theoretical plane surface would have little or no visible effect upon the image quality.

A sufficiently concave screen would have some effect upon the distortion of the screen image when viewed from a position to the extreme right or left of the theatre. Figures on the far side of the screen from the observer would appear somewhat less distorted, since the viewing angle would be less acute; those on the near side would appear *more distorted* (italics ours); and those in the center would remain unchanged. Whether these results would be of advantage to the audience we cannot say.

Investigation Needed

This matter of curved surfaces would need, and seems worthy of, much more thorough investigation and some tangible information if one is to properly evaluate its worth or lack of it. Thus far the proponents of such screens have offered nothing that would provide the basis for such scientific appraisal.

It appears that the manufacturers of such screens consider each installation as an individual problem and that each screen must be specially designed on the basis of width of theatre, screen size and length of throw. An analysis of a typical situation of this sort and of the method whereby the curvature of the screen is computed would be of considerable interest and a most worthly contribution to the literature of the art.

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For Uncle Sam—& YOU
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PENSION PROTECTION

(Continued from page 21)

credited service, etc., that relatively few workers can qualify for full benefits — is not likely to be substantially higher than his share of the contributions which would be necessary to fund the same level of pension benefits through the S. S. system.

The S. S. system provides those benefits, not just to those few who manage to reach age 65 after long and unbroken service with a single employer, but to all workers who are employed anywhere within the range of S. S., regardless of how many times they change jobs.

The prospect of employer support is a very poor reed for labor to lean on in its efforts to secure genuine and necessary improvements in the S. S. program. The type of support that employer groups would be likely to give would be a very dubious asset at best — for the superficial improvements that might result might also involve other changes which could have the effect of undermining the soundness of the program.

Craft-Wide Programs

What would seem more likely to ease employer opposition to further improvements in the Federal Social Security system would be the prospect that unions might otherwise press for the wider adoption of collective bargaining plans that provide the same type of protections and the same continuity of coverage as does S. S. — through liberal vesting provisions and industry, area and craft-wide programs.

Plans of this type would be more costly to the employers involved, per unit of benefit, than would an improved Federal system, and would thus offer a very substantial inducement to employers to avoid such a development by supporting a liberalized Federal system — regardless of whether or not an "offset" device is employed.

[CONCLUSION]

Those Tinted Windshields!

Fears that tinted windshields will damage the drive-in theatre business are unfounded, according to a recent report by the Automobile Manufacturers Assoc. Effect of the tinted glass is negligible upon both black-and-white and natural color screen images, it was stated.

The tinted windshields, usually green, are a new development in the auto industry, and are described as heat absorbing. A small amount of iron in the glass composition is said to absorb about 51% of solar heat. The amount of tint resulting is actually less than is found in many eyeglasses of the slightly tinted type (not sunglasses) now being widely used.

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FLAT SCREEN FOR PREMIERE THEATRE

(Continued from page 16)

less Hy-Candescent condenser arc lamps, burning at 170 amperes, the same level as before CinemaScope installation. Our standard cooling unit is the Simplex heat filter which removes heat from the projection beam by means of staggered strips of heat-absorbing glass, air cooled by a blower unit with its own motor and fan.

Our stereophonic sound system was manufactured and installed by RCA, including the "penthouse" soundheads mounted on the projectors. The speaker system includes three stage speaker units, one at the center and two side-speaker units which are mounted on movable towers that are quickly rolled off the stage just before the "live" show. Plans are underway to fly these speakers also so that the stage can be cleared in the least possible time.

Altogether, the biggest problem to be solved in making the CinemaScope installation at the Music Hall was the selection of the most suitable type screen. Before installation of the present screen, a number of tests were made by myself, John Jackson, stage manager, and Eugene Braun, director of lighting, with the cooperation of the manufacturers of the Magnaglo-Astrolite screen. Four different types of screens were tested in addition to four different panels of screen material before a selection was made.

Light Is Adequate

Other tests included a light meter examination of the screen. We found both center and side adequately lighted. Eye examination of the picture from many different angles in both orchestra and balconies pleased everyone. Use of a flat screen was felt to have another advantage to us in addition to economy of stage space.

Another interest during the screen tests was to reduce the faint horizontal lines visible when light shined on the screen. It was found that these lines were slightly more noticeable toward the bottom of the screen when viewed from the balcony. For that reason a reverse method of "shingling" was used in the joints of the lower panels where the projection beam strikes at the sharpest angle.

In conclusion, I want to mention again the flatness of the screen. Before it was installed we were naturally concerned because a curved screen, which we couldn't use, had been required by 20th Century-Fox for its CinemaScope projection method, but we now feel that the peripheral-vision depth effect can be maintained on a flat as well as the curved screens usually employed for CinemaScope.

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New Pola-Lite Beam Splitter

Theatres interested in an inexpensive beam-splitting device for single-film 3-D propection may want to consider a new "package" plan being offered by the Pola-Lite Co., of New York City. A light-weight beam splitter that clamps on the projection lens can be had for $100 by any theatre contracting to buy 6,000 pairs of Pola-Lite glasses at 10 cents a pair.

Presently the biggest stumbling block in the path of single-strip 3-D systems is the lack of films printed for the process. Pola-Lite believes that it has made a good start toward solving this problem by arranging with Universal to obtain prints of two newly-released 3-D features with the double images printed side by side on the same frame for beam-splitter projection.

LENSES: Projection Heart

(Continued from page 14)

it is being exposed on the screen, its rapid movements parallel to the optical axis produce an out-of-focus effect that cannot be corrected by manipulating the focusing knob. This peculiar blur is seldom noticeable with long-focus lenses, but it is exceedingly troublesome with short-focus lenses.

Print Age, Condition

New prints fresh from the processing laboratory give more trouble in this respect than old, well-seasoned prints that have been projected many times at normal arc amperages. A new print lies quite flat in the aperture *when not illuminated,* hence the pincushioning must begin from "zero point" when flashed by the arc beam. In other words, the middle of each frame moves along the optical axis from the zero point of flat film to maximum-buckle point each time the rotating shutter allows light to strike the film.

An old print, on the other hand, is to some extent already pincushioned, or permanently "frame embossed." Further exposure to heat has little effect upon it; and since the pincushioning of the frames is nearly at a constant value, the film flutters but very little, and the lens is able to maintain an excellent focus.

This is not to say that all old prints present no focusing problems. A print that has spent a summer making the rounds of large drive-in theatres is usually so badly buckled that it cannot be kept in focus for even a minute at a time. And heat filters are powerless to prevent a heat-damaged film flopping in and out of focus.

Picture Focus Drift

A small amount of focus drift is found even in prints that have not been punished by projection at 120 to 175 amps. With long-focus lenses, normal focus drift is practically invisible, and projectionists who operate in long, narrow theatres need refocus during the running of a single reel very seldom. When lenses of 4 to 5 inches E.F. are used, normal focus drift often requires frequent sharpening of the focus. With short-focus lenses the situation is practically hopeless.

The causes of normal focus drift are not fully understood. Some authorities are of the opinion that variations in the moisture-content of the emulsion are mainly responsible, while others lay the blame on the curl which is set in the film by being wound tightly on a reel. There are probably other factors, the winding of soft, new film on small-hubbed reels immediately after processing, for example.

Because focusing must be done rather frequently in theatre projection, it has developed into something of an art. It should be done *inconspicuously* so as not to divert the audience. Briefly, the knob should be turned slowly in the correct direction; and when crisp clarity of image has been attained, the turning of the focusing knob should stop then and there. Finesse is required.

Depth of Focus Variations

We have mentioned "depth of focus" several times. Fig. 1 shows how this varies with different types of lenses. The smallest image of a point which any lens is able to produce is not a point at all, but a small disk — a "circle of confusion." With every lens there is a slight leeway in the position of sharpest focus. The lens can be moved back and forth within these narrow limits without increasing the size of the smallest circle of confusion, hence without affecting the clarity of the image on the screen.

Slow lenses and those of long focal length have greater depth of focus

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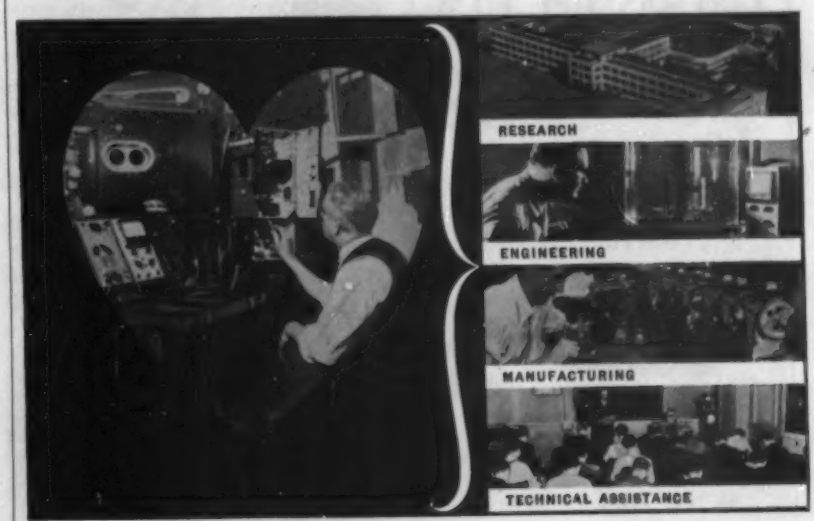

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than fast lenses and those of short focal length simply because the angles formed by the light rays produce a wider range wherein the smallest circles of confusion do not materially change in size.

We may visualize depth of focus as a region between two nearly parallel planes which limit the range of sharp focus. The film, naturally, must lie in this region in order to appear in focus on the screen. If the film flutters outside the limits of this critical region, then it will temporarily go out of focus. The projectionist, when he focuses the picture, moves the entire region of sharp focus *into the film!*

Film Flutter Range

The amount of negative buckling, or pincushioning toward the lamp, may actually exceed 0.02 inch at high amperages, but at lower arc currents it is normally only 0.005 to 0.01 inch. This is the normal range of flutter in brand-new prints, and it closely corresponds to the depth of focus of lenses in the 6-to-8-inch E.F. class.

With well-seasoned prints some of the buckle has been embossed in the film, and the flutter consequently is less than the total amount of bulge as measured from the zero-point of a perfectly flat film-plane. In such a case the flutter-range may be much less than the 0.002-to-0.004-inch depth of focus of lenses in the 4-to-5-inch E.F. class, and accordingly quite invisible on the screen.

But with fast, short-focus lenses, as pointed out previously, the depth of focus is so small that even the slightest amount of buckling and flutter will obviate a good screen-image — *even if the lens itself be perfect!* And we wish to repeat, also, that it is usually necessary to use the most powerful lamps with short-focus lenses for adequate screen illumination, and that these lamps increase buckling and flutter. Projection quality thus finds itself the victim of a vicious circle from which there is little possibility of escape. The lens manufacturers cannot help us, but the film manufacturers can by inventing a more suitable film for high-powered projection.

High-Powered Arcs

A perfect motion picture screen image is still the dream of projectionists; but cold reality makes us wonder if our dreams will ever come true. It seems that every technological innovation of the past few years has deprived the movies of some of the pictorial excellence which all of us took for granted a couple of decades ago. The matter of acetate safety film has been mentioned. The excessively high-powered arclamp is another innovation. Designed at first for the large drive-ins that require them, such lamps are excellent devices for raw lumen-production. But no one really expects or looks for top-notch picture-quality in a drive-in. It is the increasing use of these lamps in *indoor* theatres that is objectionable.

Objectionable or not, however, powerful lamps must be used for illuminating gigantic screens for normal projection and wide screens for CinemaScope presentations. It can

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be reasonably argued that, in America, indoor theatres are too few and too large.

In 1947 a lamp manufacturer declared that "it is impractical to use more than 1500 lumens, as it would damage the film. . . . It is furthermore wasteful, as well as futile, to burn more than 70 amperes in any reflector lamp." We heartily agree. And yet that same manufacturer has subsequently marketed several 90-amp., 120-amp., and 135-amp. reflector lamps which are, admittedly, absolutely necessary for 3-D and wide-screen projection, *but with unavoidable deterioration of picture quality.*

Apart from its dullness and the clumsiness of its technique, polarized-light 3-D has nibbled away at pictorial quality in other ways, well known to the reader. So let us pass on to the latest, most expensive, and most heavily financed process, CinemaScope.

CinemaScope Presentations

CinemaScope has destroyed trueness of pictorial perspective with its curved screen. Its anamorphic optics has indulged in a damaging whack at image-definition. (CinemaScope focus is sometimes awful and sometimes fair, but never good.) And, like true 3-D, CinemaScope demands the use of film-withering arc currents.

The widespread use of short-focus lenses for the projection of standard-format pictures is due in no small measure to the present aspect-ratio fad. The worst effects, of course, are produced by the small depth of focus of short-focus lenses; but there is another very important point to be considered. Celluloid personages are daily suffering various degrees of decapitation and amputation by such extreme aspect-ratios as 1:2.5, 1:2, 1:1.85, 1:1.75, and 1:1.66. It is impossible to trim such large areas from the top and bottom of a standard-format picture without scalping someone in the close-ups. Pictorial surgery of this sort is utterly barbaric — and a bit unfair to the cash customers.

It is hard to escape the conclusion that the use of undersized apertures is a species of optical cheating. No matter how thin the conventional picture is sliced, it isn't Cinerama, and everyone knows it.

The standard format is 3:4 or, more exactly, 2.9:4, which corresponds to an aspect-ratio of 1:1.37. It has been in use ever since the movies came into being, and it is extremely adaptable, suitable for both close-ups and long-shots. However, a slightly wider picture might indeed be an improvement. An aspect-ratio of 1:1.5 suggests itself as a picture-proportion which would not interfere with the dramatic fluidity of the movies.

Recommended Aspect Ratio

But we do not recommend that the area of a standard picture be cut down by the use of a 1:1.5-proportioned aperture. What we do recommend is a wider film to accommodate such a picture without loss of picture detail and without loss of footage due to thick framelines or interframe spaces. Such a recommendation, however, might not seem sufficiently spectacular to an industry which is interested only in applying expensive frosting to the same stale cake. In fact, film standards should have been radically revised when the inception of sound-on-film offered an excellent opportunity to do so.

It is only fair to state that a clever use is made of short-focus lenses in a few theatres by reserving them only for selected scenes in certain types of feature films and for one or two of the

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short subjects. This is essentially the idea involved in Harry Rubin's famous Magnascope lens, the *judicious* use of which increases the effectiveness of mob scenes and other spectacular shots, especially when photographed in natural color.

Special Aperture Plates

When such a lens is used as a novelty, it is necessary to have a large screen and motor-controlled, or manually-operated, movable masking in order to expose the entire area of the large screen for the highly magnified picture. Moreover, since the bottom edge of the regular, small picture and the bottom edge of the large picture coincide, there must be some provision for raising the image somewhat when the short-focus lens is used. This may be done by inserting a special aperture plate having a slightly lower window, or else by raising the short-focus lens so that its axis lies above and parallel to the optical axis of the projector.

Because it is impossible to switch quickly from one lens to another for special scenes within a reel, even when each lens is clamped in a prefocused mount, the most that can ordinarily be done is to use the short-focus lens for selected *whole reels*. It is always possible, of course, to break up a long reel into several short rolls; but this procedure is bothersome to the projectionist and discountenanced by the film exchanges.

All of these difficulties may be hurdled by using a "zoom" lens. This is a lens of variable focal length. When it is desired to enlarge the picture, the projectionist merely turns a knob which alters the distance separating the several elements of this special-effects lens.

Motor-controlled masking is mandatory with the zoom lens because the regular-size picture does not look pleasing on an open, oversized screen. This is a considerable expense.

'Trick' Lenses—Yes, But . . .

At all events, the zoom lens should not be used for regular projection when no zoom effect is to be used. A lens can be adequately corrected optically for one definite focal length only. Change the focal length by changing the distance between the elements, and serious aberrations creep in to mar the picture. "Trick" lenses, therefore, should be reserved only for occasional use, and never kept on for the projection of an entire show. It should be remembered that a large part of their effectiveness is due to the *change* which takes place in the size of the picture before the eyes of the audience.

The cost of a zoom lens is even more shocking than that of a CinemaScope lens. Unlike all other projection lenses, zoom lenses have moving parts and are custom-built. The average theatre cannot afford them.

[TO BE CONCLUDED]

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IA OBITUARIES

JAMES G. CAMPION, 66, charter member of Local 498, Kansas City, Kans., died February 11 from a heart attack. A native of Canada, he came to Kansas City in 1903 and helped to organize Local 498. He served the Local as its business representative for 30 years until 1949, when ill health forced him to resign from office. His son, Edward, was elected to that post upon his father's retirement. During World War II, Campion was a special organizer for the AF of L, and also served on the Wyandotte rationing board.

He is survived by his wife and son.

HARRY W. WILLIAMS, 58, president of Local 626, Nashville, Tenn., succumbed to a heart attack on February 3 as he was about to report for work at Loew's Theatre, where he had been employed for the past 30 years. "Puddy" Williams, as he was known to all his friends, was a charter member of the Local and was extremely popular with the membership.

WILLIAM F. WEISHEIT, 64, member of Los Angeles Local 150 since 1928 and a charter member of Hollywood Studio Projectionists Local 165, died suddenly on February 6. Born in Dubuque, Iowa, Weisheit came to California just before the turn of the century. He joined the projection department of 20th Century-Fox studios in 1928. In 1933 he was appointed projection supervisor for Fox studios, a post he held until the time of his death.

Weisheit was a highly skilled technician and was active in the pioneering development of 20th Century-Fox's CinemaScope and stereophonic sound.

He is survived by his wife and two daughters. Masonic services were held in Beverly Hills, Calif., on Wednesday, February 10.

Fox Restricts 'Scope Lenses

Use of Japanese and German anamorphic lenses for the showing of CinemaScope pictures released by 20th Century-Fox seems to be effectively ruled out in new contract terms with exhibitors set by the film company.

The contracts, it is understood, call for the use of Bausch & Lomb or Bell & Howell lenses only.

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